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THE AGRICULTURAL GAZETTE OF CANADA

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THE DISTRIBUTION OF PURE-BRED MALE ANIMALS

THE KEEPING OF PIGS IN URBAN CENTRES

RECEPTACLES FOR SCHOOL FAIR EXHIBITS

THE WORLD'S WHEAT CROP

DEPARTMENT OF AGRICULTURE
OTTAWA, CANADA.

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MANUSCRIPT FOR THE FORTHCOMING NUMBER SHOULD REACH THE EDITOR NOT LATER THAN THE 5th OF THE PRECEDING MONTH.

Vol. 5, No. 6 June, 1918

DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE

The Agricultural Gazette
of Canada

EDITOR: J. B. SPENCER, B.S.A.

Issued by direction of
THE HON. THOS. ALEXANDER CRERAR
Minister of Agriculture

OTTAWA
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1918

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OF CANADA

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THE DISTRIBUTION OF PURE-BRED MALES

THE live stock of Canada, numbering in 1917, 13,526,219 and valued at a billion dollars, is the right arm of her agriculture, and yet we have much to learn of the value of the improved sire, and until we learn more of that lesson we shall sacrifice much in feed and effort. The farm survey carried on last year by the Ontario Department of Agriculture in Caledon township, and reported in THE AGRICULTURAL GAZETTE for May, showed that of the sires used only about twenty-three per cent were pure-bred. The study included horses, cattle, sheep, and swine, and showed that only in draught horses were no grade sires patronized. It is fair to assume that a similar survey would reveal a corresponding state of affairs in most of the advanced sections of Canada, and in many places a much greater use of unimproved blood.

In critical times like the present, the selection and proper use of good sires become more urgent and the elimination of grade sires as far as practicable more important. No less an authority than the late Amos Cruickshank once remarked that the bull is often ninety per cent of the herd, while Mr. John Gosling, another live stock sage, has stated that "the bull is half the herd, and if he is a bad one he is all of it."

It was a realization of the value of the pure-bred sire that led the Minister of Agriculture and the Live Stock Commissioner to inaugurate and pursue the policy providing pure-bred males for the use of societies in outlying districts. This service, which was established five years ago, has made available to farmers in districts scattered from coast to coast upwards of 150 stallions, 2,000 bulls, 1,600 rams, and 450 boars. Nor is this work confined to the federal Department, as the provinces are active in pursuing policies of organized distribution. The stories of their efforts, which are published in Part II of this number, reveal a hopeful future for the industry.

Another agency that indicates progress in the industry is the registration of pedigrees. The number recorded in 1917 was 61,322, which is fifty per cent higher than for the twelve-month period five years ago, and never in the history of pedigree registration has the National Live Stock Records organization been so busy as it has been in 1918.

THE CULTIVATION OF FLAX

IN the House of Commons on April 29th, the member for East Middlesex introduced a motion having for its object the increased cultivation of flax in Canada. Dealing with the subject, after the member for East Middlesex had explained his motion, the Honourable the Minister of Agriculture said in regard thereto:

There is no doubt whatever that our soil and climate are admirably adapted to the growing of flax for fibre purposes. That has been proven by years of successful growing in certain localities in which in the earlier days of the country's development the settlers found it necessary to grow flax in order to supply themselves with a good deal of the clothing they required. Impressed with the importance of the industry in Canada, the Department of Agriculture several years ago undertook certain experimental work in respect to it. That experimental work covered practically the whole development of the industry from the growing of the flax to the manufacture into twines. In carrying on this work the Department have grown experimental plots of flax in practically all of the experimental farms and stations in Eastern Canada. They have found that it can be grown very successfully, and I believe that the records show that the Gaspe peninsula produces perhaps the best quality of fibre grown in Canada. Flax has also been grown in Western Canada. It cannot, however, be grown so successfully there for fibre purposes; the climate appears somewhat against it.

The experimental farms have carried the work further. They have, on a small scale, quite an up-to-date set of machinery for carrying on the various operations of preparing fibre from the straw. In that way we are endeavouring to ascertain, first, the district from which the best fibre can be secured, and, second, the relative cost of turning it into the finished article in each district. That work will be of great advantage to the farmers of Canada who will be growing this flax later on.

That the minds of our farmers have been turned to the growth of this plant for fibre purposes is evidenced by the fact that the acreage planted for fibre purposes is steadily increasing. In Western Canada we have grown flax in quite a large way for seed. The flax crop of Western Canada has run in yield of bushels from fifteen to twenty million per annum, and the results have been very satisfactory.

Experiments have for several years been carried on with the ripened straw that results after threshing out the seed. This straw is ripened, and it has never been considered of any practical value for fibre purposes. Experiments, however, have proven beyond any question of doubt that it can be converted into twines. I have in my office several samples of twine that have been manufactured in the city of Regina from fibre taken from flax straw. The product varies from fine hard twine, quite suitable for sewing harness and that sort of work, to coarser twine suitable for replacing ordinary binder-twine.

Last year the crop of flax straw in Western Canada amounted to about 1,500,000 tons. Experiments have shown that each ton of flax straw will produce 270 pounds of twine in its various forms. If all that flax straw were converted into twine, it would produce something over 300,000,000 pounds of twine. Canada annually uses something like 60,000,000 pounds of binder-twine. Our source of supply is from two countries, the Philippine Islands and the province of Yucatan, in Mexico, and if those sources of supply for the raw material the manila, and the sisal, were cut off, it would leave the farmers of Canada, particularly those of Western Canada, where they are engaged in grain growing on such a large scale, in a bad position. Consequently it is a matter of the very greatest importance to consider how this at present wasted material can be utilized to ensure an adequate supply of twine to bind our crops. And if we can convert waste material into useful product, we are simply getting that much further ahead in an economic way. That phase of the question, in my judgment, is one of very great importance.

If we survey the whole field again we shall find that probably the successful growing of flax for fibre purposes in Canada depends upon the cheapness of the labour we can secure. If we can replace manual labour by mechanical power, by the discovery and development of machines that will pull the flax, we certainly have all the natural facilities for a splendid development of this industry.

REGULATIONS REGARDING MIGRATORY BIRDS

ADOPTED BY ORDER-IN-COUNCIL UNDER THE MIGRATORY BIRDS CONVENTION ACT

IN THE AGRICULTURAL GAZETTE, Vol. 3, No. 12, December, 1916, pages 1032-1036, an account was given of the international convention for the protection of migratory birds in the United States and Canada. The convention was put into effect by the passage of the Migratory Birds Convention Act, which was assented to on August 29th, 1917. Under the provisions of Section 4 of this Act, Regulations were passed by Order-in-Council on April 23rd for the protection of migratory game, migratory insectivorous, and migratory game birds which inhabit Canada during the whole or any part of the year.

Special attention is directed to Regulation 3, which affords permanent protection to migratory insectivorous birds. These birds constitute one of the most important natural checks on the increase of insect pests, and their protection is, therefore, of special importance, as a means of aiding increased production by securing increased crop protection.

The Regulations, which follow, prohibit spring shooting, which has been an important factor in the reduction of our migratory wild fowl and other game birds:—

Definition.

1. In these regulations, unless the context otherwise requires:—

(*a*) "Migratory game birds" means the following:

Anatidæ or waterfowl, including brant, wild ducks, geese and swans;

Gruidæ or cranes, including little brown sandhill and whooping cranes;

Rallidæ or rails, including coots, gallinules and sora and other rails;

Limicolæ or shore-birds, including avocets, curlew, dowitcheres, godwits, knots, oyster catchers, phalaropes, plovers, sandpipers, snipe, stilts surf birds, turnstones, willet, woodcock, and yellow-legs;

Columbidæ or pigeons, including doves and wild pigeons;

(*b*) "migratory insectivorous birds" means the following:—

Bobolinks, catbirds, chickadees, cuckoos, flickers, fly-catchers, grosbeaks, humming birds, kinglets, martins, meadowlarks, nighthawks, or bull bats, nuthatches, orioles, robins, shrikes, swallows, swifts, tanagers, titmice, thrushes, vireos, warblers, waxwings, whippoorwill, woodpeckers, and wrens, and all other perching birds which feed entirely or chiefly on insects;

(*c*) "migratory non-game birds" means the following:—

Auks, aucklets, bittern, fumars, gannets, grebes, guillemots, gulls, herons jaegars, loons, murres, petrels, puffins, shearwaters, and terns.

Close Seasons:

2. No person shall kill, capture, injure, take, molest, sell or offer for sale any migratory game birds during the following periods:

Ducks, Geese, Brant or Rails.

In Prince Edward Island, New Brunswick, Quebec, Ontario, Alberta, British Columbia, (northern district), North-west Territories and Yukon Territories,

December 15 to August 31, both days inclusive.

In Manitoba:—

December 1 to September 14, both days inclusive.

In Nova Scotia, Saskatchewan and British Columbia (south-eastern district):—

January 1 to September 14, both days inclusive.

In British Columbia (south-western district):—

January 15 to September 30, both days inclusive.

Shorebirds or Waders, including only the following:

Woodcock, wilson or jack snipe, black-breasted and golden plover, and the greater and lesser yellow legs:—

In Prince Edward Island, Nova Scotia, New Brunswick, and in the counties of Saguenay, Rimouski, Gaspe and Bonaventure in Quebec:

December 1 to August 14, both days inclusive,

Except that on woodcock and wilson or jack snipe the closed season in Prince Edward Island and New Brunswick shall be from December 1 to September 14, and in Nova Scotia from December 15 to August 31, both days inclusive.

In Quebec, other than the aforementioned maritime counties, Ontario, Alberta, British Columbia (northern district), North-west Territories and Yukon Territory;

December 15 to August 31, both days inclusive,

Except that on woodcock and wilson or jack snipe, the close season in Ontario shall be from November 15 to October 14, both days inclusive.

In Manitoba:

December 1 to September 14, both days inclusive.

In Saskatchewan and British Columbia (south-eastern district):

January 1 to September 14, both days inclusive.

In British Columbia (south-western district):

January 15 to September 30, both days inclusive.

Provided, however, that:

Indians and Eskimos may take scoters or "Siwash Ducks" for food at any time of the year, but scoters so taken shall not be sold.

In this or any other regulation the southern limit of the northern district of British Columbia shall be, west to east, a line running by way of the middle of Dean Channel, Dean River, Entiako River, Nechako River and the Fraser River from Fort George to Yellowhead Pass; and the line of division between the south-eastern and the south-western districts of British Columbia shall be the summit of the Cascade Range as defined by the British Columbia Interpretation Act, Revised Statutes, 1911.

Permanent Protection of Insectivorous Birds.

3. The killing, capturing, taking, injuring, or molesting of migratory insectivorous birds, their eggs, or nests, is prohibited throughout the year, except as hereinafter provided.

Protection of Migratory Non-game Birds.

4. The killing, taking, injuring, capturing or molesting of migratory non-game birds or their eggs or nests, except as herein or hereinafter provided, is prohibited throughout the year; Provided, however, that Indians and Eskimos may take at any season auks, auklets, guillemots, murres and puffins and their eggs for human food and their skins for clothing, but birds and eggs taken in virtue of this exemption shall not be sold or offered for sale or otherwise traded.

Close Season for Ten Years on Certain Migratory Game Birds.

5. A close season shall continue until the first day of January, 1928, on the following migratory game birds: band-tailed pigeons, little brown, sandhill and whooping cranes, swans, curlew and all shore birds (except the black-breasted and golden plover, wilson or jack snipe, woodcock, and the greater and lesser yellowlegs. In the province of British Columbia during such period the close season on cranes, swans, and curlew, shall be made by the proper authorities of that province within the general dates and limitations elsewhere prescribed in these regulations for the respective groups to which these birds belong, or greater restrictions on the hunting of these birds shall be made should the aforementioned authorities deem such further restrictions desirable as provided by Article III of the Convention between His Majesty and the United States of America, scheduled to chapter 18, 7-8 George V.

Close Season for Five Years on Wood Duck and Eider Duck.

6. A close season shall continue until the first day of January, 1923, on the wood duck and eider duck, except that in the province of British Columbia, the wood duck shall be protected by such special means or regulations as the proper authorities of that province may deem appropriate, as provided by the convention referred to in clause 5.

Prohibition of Taking Eggs of Migratory Birds.

7. The taking of the nests or eggs of migratory game, migratory insectivorous or migratory non-game birds is prohibited except as otherwise provided in the regulations.

Permits for Taking Eggs for Scientific and Propagating Purposes.

8. Migratory game, migratory insectivorous or migratory non-game birds or parts thereof or their eggs or nests may be taken,

shipped, transported or possessed for scientific or propagating purposes, but only on the issue of a permit by the Minister or by any person duly authorized by him. Such a permit shall terminate at the end of the calendar year in which it shall have been issued, it shall not be transferable and shall be revocable at the discretion of the Minister.

Such permits may, upon application, be granted to recognized museums, or scientific societies, and to any person furnishing written testimonials from two well-known ornithologists.

Applications for permits for propagating purposes shall be accompanied by a statement giving:

(1) The species of birds or eggs that it is desired to take,

(2) the number,

(3) the place at which the birds or eggs are to be taken.

Any package in which such migratory game, migratory insectivorous or migratory non-game birds, or parts thereof, or their eggs or nests are shipped or transported for scientific or propagating purposes shall be clearly marked on the outside with the number of the permit, the name and address of the shipper and an accurate statement of the contents.

No transportation company shall accept for transportation any package containing eggs, nests, or parts of migratory game, migratory insectivorous or migratory non-game birds unless such package shall be marked as hereinbefore required, and shipment of the same through the mail is prohibited, unless marked as aforesaid.

Prohibition of Shipment of Migratory Birds During Close Seasons Prohibited.

9. The shipment or export of migratory game, migratory insectivorous, or migratory non-game birds or their eggs from any province during the close season in such provinces is prohibited, except for scientific or propagating purposes, and traffic between Canada and the United States in any such birds, or their eggs captured, killed, taken or shipped at any time contrary to the laws of the Province or State in which the same are captured, killed, taken or shipped, is likewise prohibited.

International Shipments of Migratory Birds shall be plainly labelled.

10. No person shall ship or offer for shipment from Canada to the United States any package containing migratory game, migratory insectivorous or migratory non-game birds, or any parts thereof, or their eggs, unless such package shall have the name and address of the shipper and an accurate statement of the contents clearly marked on the outside of such package.

No transportation company shall accept for transportation to the United States, any packages of migratory game, migratory insectivorous or migratory non-game birds, or any parts thereof, or their eggs, unless such packages bear the name and address of the shipper and an accurate statement of the contents, and shipment of the same through the mails is prohibited, unless marked as aforesaid.

Permits to Kill Migratory Birds When Injurious:

11. If any of the migratory game, migratory insectivorous or migratory non-game birds should under extraordinary conditions become seriously injurious to agricultural, fishing or other interests in any particular locality the Minister may issue permits to kill such birds so long as they shall continue to be injurious. Applications for such permits shall include a full statement describing:

(1) the species and an estimate of the numbers of birds committing the damage,

(2) the nature and extent of the damage,

(3) the extent of the agricultural or other interests threatened or involved.

Such permits shall be revocable at the discretion of the Minister. On the expiration of the permit the person to whom it is issued shall furnish to the Minister a written report showing the number of birds killed, the dates upon which they were killed and the disposition made of the dead birds.

No birds killed under such permits shall be shipped, sold, or offered for sale.

Introduction of Foreign Species of Migratory Birds Without Consent Prohibited.

12. No person or organization shall introduce for the purpose of sport or acclimatization any species of migratory birds without the consent of the Minister in writing.

PART I
Dominion Department of Agriculture

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF HORTICULTURE

EUROPEAN OR VINIFERA GRAPES GROWN IN THE OPEN AT OTTAWA

BY W. T. MACOUN, DOMINION HORTICULTURIST

THE European or Vinifera grapes have been very little grown in Canada. The experience in the Eastern States in attempting to grow them was so discouraging, that, doubtless, the old settlers in the province of Ontario did not feel very enthusiastic about trying them, and as new, vigorous, and hardy varieties of American origin began to be introduced in the early part of the 19th century, there was little inducement to test them. The European grapes must be covered with soil in winter, but, apart from that, they are treated much as the American varieties. They are not recommended to be grown commercially, but for home use only. The oldest record of the successful cultivation of a European grape vine in eastern Canada that we have is that of a vine in the garden of a citizen of Perth, Ont., which is said to have been introduced from Italy nearly ninety years ago. This is an early green grape of the Sweetwater group. This variety is now growing at the Central Farm. The first experience with the European or Vinifera grapes at this farm was in 1900, when cuttings of a variety called "Bonne Madame" were obtained from Mr. D. Matheson, Ottawa, Ont. This variety was obtained by Mr. Matheson from a Roman Catholic institution in Montreal, and it was supposed to have come from Italy. It also is of the Sweetwater group. Two vines of this grape were planted in the vineyard in Ottawa in 1902, and the first fruit was produced in 1905. This variety was found to be one of the earliest ripening sorts in the vineyard, and has continued to be so.

As it was thought that there might be other Vinifera grapes which would ripen at Ottawa, a number of varieties were imported from France and Germany in 1909, and the following is a list of these with notes as to whether they ripen at Ottawa or not:—

Black Alicante.—Does not ripen.

Black Hamburg (Frankenthal).—Does not ripen.

Bonne Madame.—Ripened every year until recently when old vines were destroyed, and the new ones are not in bearing.

Buckland Sweetwater.—Ripens in some seasons.

Chasselas Dore de Fontainebleau (Weisser Gutedel).—Nearly ripens, ripens in some seasons.

Chasselas Gros Coulard.—Ripens in some seasons.

Chasselas Rose Royale.—Does not ripen.

Chasselas Rouge (Roter Gutedel).—Ripens in some seasons.

Chasselas Vibert.—Nearly ripens.

Chasselas Violet.—Nearly ripens.

Foster White Seeding.—Nearly ripens.

Früher Blauer Burgunder.—Does not ripen.

Früher Leipziger.—Ripens in some seasons.

Früher Roter Malvasier.—Does not ripen.

Gamay de Juillet.—Ripens very early, but is very small and not desirable for eating.

Grandiska.—Does not ripen.

Gromier du Cantal.—Does not ripen.

Gros Colman (Dodrelabi).—Does not ripen.
Gros Dore.—Does not ripen.
Lignan Blanc.
Liebert.—Nearly ripens.
Madeleine Angevine.
Madeleine Royale.—Ripens in some seasons.
Muscat Noir.—Does not ripen.
Pearl of Casaba.—Ripens very early.
Peuse (Malaga).—Does not ripen.
Portugais Oben.
Precoce de Malingre.—Ripens in some seasons.
Sauvignon Jaune.

In addition to the above a number of varieties were imported from France more recently, none of which have fruited. The best and most promising variety for parts of Canada where the season is as short as at Ottawa is the Pearl of Casaba, a Hungarian variety. Not only is this very early, but it is of good quality and one which is strongly recommended for trial. Following is a description of the fruit:—

Pearl of Casaba: Bunch, length, 5 inches, breadth, 3 inches; form compact; shoulder slightly shouldered; berry, size medium; form round; colour, yellowish green; bloom thin; skin moderately thick, moderately tough; seeds few, usually two, often none; flesh tender, juicy; flavour sweet, sprightly, muscat-like, good; quality good; use, dessert; season very early; evidently not a good keeper. General notes: A very early European grape of good quality.

THE HEALTH OF ANIMALS BRANCH

GARBAGE FEEDING AND HOG CHOLERA

BY FREDERICK TORRANCE, B.A., D.V.S., VETERINARY DIRECTOR GENERAL

THE records of the Health of Animals Branch show that a very close connection exists between garbage feeding and hog cholera. In fact nine-tenths of the outbreaks of this disease in Canada are due to this cause alone. The infective material consists in scraps of uncooked pork, such as rinds, trimmings of meat or fat. Experiments have proved that any such material is extremely dangerous if it comes from a hog slaughtered in the early stages of the disease, and, as such hogs cannot be always detected by meat inspection, there is a constant danger of infective pork. Cooking destroys the infection, and the Department requires that garbage must be cooked before feeding it to hogs. (See Regulation 88¾ of the Animal Contagious Diseases Act given in THE AGRICULTURAL GAZETTE for April, page 350.)

Licenses to feed garbage are only issued to those who have the equipment for properly cooking the garbage and who agree to do so. Under this arrangement we have licensed several hundred garbage feeders, chiefly in the vicinity of cities and towns, and our system of inspection enables us to get early information of the appearance of disease. From the standpoint of protection against disease, the license system has worked well and has reduced our losses to a very great extent.

Recently there has been a demand for another system of protection against disease, namely, by rendering the hogs immune to hog cholera by the double method of inoculation. While this method has dangers of its own, it has been decided to apply it under certain restrictions. These are briefly as follows: The premises must be licensed and situated favourably for the control of the disease should it appear. The owner must agree to observe our regulations, to pay the cost of the serum and virus used, to stand the loss, if any is incurred, as a result of the inoculation, and to sell pigs only for immediate slaughter. The sale of breeding animals to go back to the farm will not be permitted. This is a new departure in the Health of Animals Branch and must be looked upon as a tentative measure, liable to be changed or abrogated if found unsatisfactory.

THE ENTOMOLOGICAL BRANCH

SOME BLOOD-SUCKING FLIES OF SASKATCHEWAN

BY A. E. CAMERON, M.A., D.SC., TECHNICAL ASSISTANT, ENTOMOLOGICAL BRANCH,
DEPARTMENT OF AGRICULTURE

INTRODUCTION

LAST summer (1917) the author in co-operation with Dr. S. Hadwen of the Health of Animals Branch, Department of Agriculture, made a preliminary survey of the blood-sucking flies affecting stock and man in the vicinity of Saskatoon. Because of other important investigations occupying their attention, including the study of bot-flies, and so-called "Swamp Fever," which causes serious losses among horses, the time allotted to the survey was necessarily limited. It is, therefore, proposed to discuss tentatively only a few of the more frequently occurring forms that were encountered within a radius of 50 miles of the city of Saskatoon, Sask. Inasmuch as the environmental conditions existing in this area are fairly representative of those throughout the southern half of the province, the remarks that follow will be found to be more or less applicable to the whole of this region, where wooded bluffs are relatively few and far between. In the northern territory, as yet unexplored by the author, it is not unlikely that in the more sheltered wooded districts, more favourable environmental conditions will prove such as to have an important bearing on the constitution of the fauna of blood-sucking flies, with a probable consequent greater fertility in species numbers. It could not but be remarked that the area studied yielded a surprising paucity of forms especially of horse-flies, although in actual numbers their dominance could not be denied.

Attention was principally paid to the three families known as the Culicidae or Mosquitoes, the Simuliidae or Black-flies and the Tabanidae or Horse-flies, all of which have aquatic larvae.

MOSQUITOES*

Until Knab published his paper "Observations on the Mosquitoes of Saskatchewan," Smithsonian Miscellaneous Collections, Vol. 50, pt. 4, 1908, pp. 540-547, very little was known about the prairie species or their habits. There still remains much to be learned. The great majority of the species of the prairie region of the northwest belong to the genus *Aedes*. These typically northern forms develop in the melting snow-water of early spring.

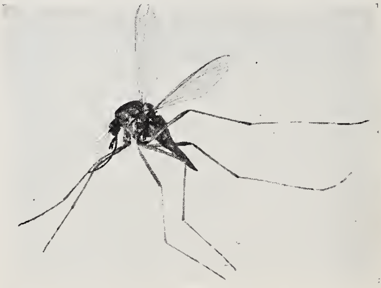

FIG. 1.—This mosquito, *Aedes fletcheri*, is commonly encountered on the prairie during the summer months. When disturbed from its resting place among the grass it will readily attack human beings and stock. Enlarged. (original).

To some, the great abundance of the prairie mosquitoes has presented a puzzling question because of the comparative scarcity of water—essential to mosquito breeding—on the prairies during the summer months. There is only a single annual brood of prairie mosquitoes, and the adults are apparently long lived. The eggs are laid in the late summer on the ground, where they remain until the following spring, when they readily hatch into "wrigglers" in the water produced from the melting snow. Many sloughs persist well into the summer, but frequent investigation during July and August failed to reveal the presence of larvae in these stagnant waters, the first and only generation having departed earlier. Knab, however, found the larvae in large numbers in alkali swamps and ditches in May and June (1907). In one or two instances *Aedes canadensis* Theob. and *Aedes sansoni* D. and K. were particularly prevalent in the immediate vicinity of these sloughs during July. Peculiar to swampy creeks and ravines opening into the Saskatchewan river, one finds *Aedes mimesis* Dyar, *Aedes vexans* Meig., and *Aedes aestivalis* Dyar, all of which are more or less persistent in their attacks on man. *A. canadensis* and *A. sansoni* were occasionally encountered in large swarms when disturbed from their shaded resting places among the grasses in these ravines.

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* The author desires to express his thanks to Dr. H. G. Dyar of the Smithsonian Institution, Washington, D.C., for kindly identifying the species of mosquitoes.

The most widely distributed species on the prairies are *Aedes spenceri* Theob., *Aedes fletcheri* Coq. (Fig. 1) and *Aedes curriei* Coq. The first two are very prevalent around Saskatoon, and it is principally due to their vicious habits that the existence of the prairie inhabitants is rendered almost intolerable at times. They are rarely to be encountered in the towns, although they enter the porches of houses on the outskirts and attack the occupants. Their attacks on stock are equally troublesome, and the provision of protective fly-nets on horses is a wise precaution now generally adopted.

From the nature of the life-history facts here outlined, it will be readily imagined how difficult is the problem of mosquito control on the prairies. None of the species appear to undertake long migratory flights, so that the problem is more or less a local one, but a local one of immense size. Undoubtedly, much could be accomplished in the vicinity of townships by oiling the temporary pools of the early spring wherever larvae are found. The judicious application of kerosene, crude oils of paraffin and asphaltum base will provide a surface film which will readily kill the larvae by suffocation as well as by their toxic properties. An alternative method, which has been employed in anti-mosquito work with great effect, is the application of a preparation known as "larvacide" manufactured according to the following formula*:—

Resin	150 to 200 lbs.
Soda (caustic)	30 lbs.
Carbolic acid	150 gals.

The product readily emulsifies in water, but, unfortunately, brackish or alkali waters render it inert. Combined with its marked toxicity it has the advantage of cheapness, a fact which makes it preferable to the more expensive kerosene oil.

Sloughs near towns might be filled up with refuse wherever possible, the work to be accomplished during the summer and fall in preparation for the thawing of the following spring.

BLACK-FLIES

The virulence of the bite which the species of this family are capable of inflicting is in inverse ratio to their size. In different parts of the continent they are known variously as "buffalo-gnats," "turkey-gnats," and "sand-flies," but the designation of black-flies is by far the most suitable in that it is not so narrow in its content as the others, each of which emphasises one particular habit of a single or limited number of species.

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* Le Prince, J. A., and Orenstein, A.J., Mosquito Control in Panama, New York, 1916, p. 174.

In the early stages of their life-histories black-flies are aquatic, and their gregarious, greenish-gray larvae (Fig. 2) are to be found attached to stones in the rapids of streams and rivers. They maintain their position in spite of the current by means of a suctorial disk at the posterior end of their body, and by means of the peculiarly adapted head-fans they contrive to sweep minute vegetable organisms such as diatoms and desmids into their mouths. Should they, by any chance, become dislodged from the security of their position, they have the power of secreting from the mouth, a silk-thread. By fixing it to a stationary object, the chances of their being washed downstream before they encounter another suitable anchorage are considerably decreased.

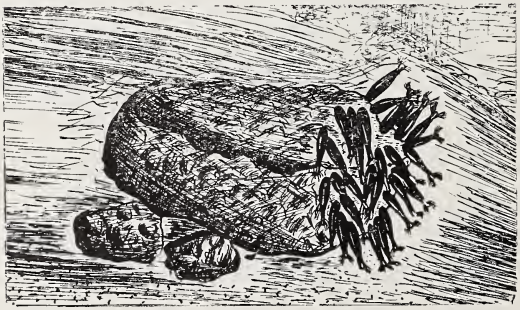

FIG. 2.—Larvae of black-fly, *Simulium similis* Mall., attached to the surface of a stone in the bed of a rapid stream. About natural size. (Original).

Before pupating the larva spins a closely woven slipper-shaped cocoon, open anteriorly. It is securely fixed to the stones, and the thread-like breathing filaments are exposed.

The velvety black flies lay their eggs on the exposed surfaces of stones or weeds, and some penetrate beneath the surface to deposit their eggs on the water-washed surface of stones. The whole life-history occupies a period of about six weeks.

We were able to witness how intense is the annoyance and injury inflicted on cattle by the persistent and tenacious attacks by myriads of these black-flies. At the beginning of July the species most abundant was *Simulium similis* Mall. (Fig. 3). On the evening of July 4 some cows staked out on the prairie in close proximity to the Saskatchewan river and not more than two miles from Saskatoon, were observed to be straining on their tethers and lowing pitiably. A closer view revealed the presence of dense swarms of this species, which extended all round the animals for at least eight to ten yards. The animals were very restless, and a close examination revealed the fact that on their forequarters, abdomen, and udders the flies were congregated in dense masses and were distended with blood. On these regions the skin was broken and blood oozed from innumerable punctures. The flies were also entering the nostrils, ears, and eyes.

The damage caused by black-flies results from their painful bites and the loss of blood which ensues. They have frequently been guilty of inflicting extensive losses among live-stock, but so far have not been incriminated as vectors of disease-causing organisms. At Duck Lake in Saskatchewan it was stated on good authority that in 1913 about 100 head of cattle died from the attacks of black-flies. The first swarms are generally in evidence about the beginning of June, and the infestations may recur at intervals as late as September and October. One witness testified to the pungent, mustard-like taste of the flies.

The Saskatchewan river, the only apparently suitable water for the breeding of black-flies (Fig. 4), is six miles distant from Duck Lake, and there is little doubt but that the flies either voluntarily or compulsorily undertake migratory flights which carry them long distances from their places of breeding. Probably they are assisted in this by mild, favouring breezes.

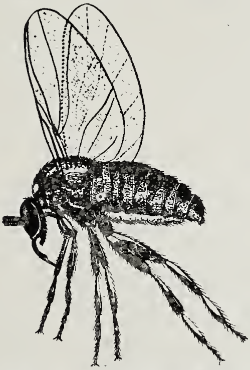

FIG. 3.—Adult black-fly, *Simulium similis* Mall, a troublesome pest of cattle and horses on the prairie and often causing the death of the animal attacked. (Modified after Lugger).

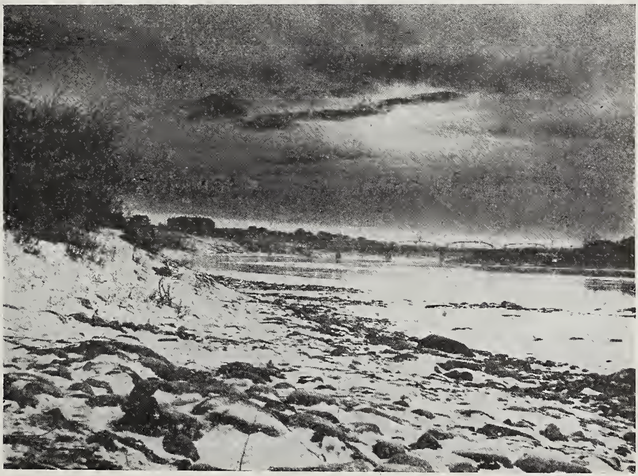

FIG. 4.—A reach of the Saskatchewan river, near Saskatoon, showing a rapid where the larvæ of black-flies are to be found attached to the surface of water-washed stones. (Original).

At the present time the only measure of control that commends itself is either to burn "smudges" which many farmers do and thus ward off the flies from the animals by the resulting dense smoke, around which they congregate for protection, or to dress their coats with some disagreeable preparation of oil or grease. Fish oil alone or in combination with other materials is one of the best repellants. A mixture* consisting of three parts of fish oil and one part kerosene spread over sores gives excellent results. In smearing animals with the various strong-smelling oils care should be taken not to use machine oil or other powerful oils, the repeated application of which tends to remove the hair. The dressing should be renewed once a day in the fly season.

The most satisfactory method of control would be to kill the larvae in the streams, but in large rivers the difficulty of making any extensive application of toxic substances is out of the question. Further, the danger to stock and human beings, who may use the treated water, must be duly emphasized. In some experiments recently carried out with

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*Washburn, F. L., Diptera, of Minnesota, Bulletin, No. 93, Agr. Exper. Stat. Univ. Minn., 1905, pp., 75-76.

Phinotas oil* in streams, it was observed that a film of oil may be found upon stones 48 hours after application, and the black-fly larvae may be killed one-eighth of a mile below the point of application.

A small stream, which drains a swampy area and debouches into the Saskatchewan river about 3 miles south of Saskatoon, was found to contain the larvae of three different kinds of black-fly, and in this particular instance treatment with Phinotas oil would have supplied the necessary remedy.

HORSE-FLIES

The flies belonging to this family are also variously known as breeze-flies, clegs and deer-flies. The name, however, by which the larger horse-flies of the prairies are most generally known is "bull-dogs," which conveys some idea of their pertinacious biting habits. The adults frequent marshy places and are commonly encountered in the vicinity of sloughs in large numbers. Here they lay their eggs on the leaves of aquatic plants, and the larvae inhabit the muddy bottoms and margins of these ponds. The larvae are carnivorous, preying upon slugs, worms, and the larvae of other insects, whilst in captivity they do not hesitate to devour their own kind.

The most commonly occurring species in the environment of Saskatoon is *Tabanus septentrionalis* Loew, (Fig. 5), which is extremely variable in its colouration and size. It was our experience that this species displayed a marked tendency to seek shade. When an automobile with the cover up was stationed near a slough they swarmed around it in large numbers, circling it in rapid flight and finally entering and resting on the roof, or on the mud-guards and sides outside. By the same token, they were often found at rest on the outside walls of dwelling-houses and inside on the windows, associated with *Tabanus illotus* O.S. and *Tabanus hirtulus* Bigot. In lesser numbers *Tabanus phaenops* O.S., *Tabanus rhombicus* O.S., *Tabanus cantonis* Marten, and *Tabanus eristatus* also occurred.

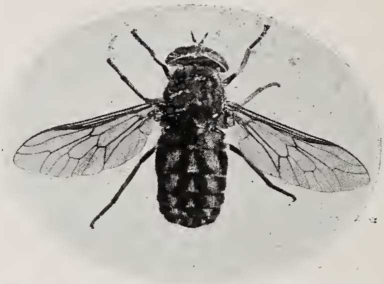

FIG. 5.—A common prairie "bull-dog" fly, *Tabanus septentrionalis*, prevalent in the vicinity of slough, and persistent in its attacks on horses and cattle (Original).

None of these species were found to be aggressive in their attitude to human beings, but they were persistent in their attacks on horses and cattle grazing on the prairies. The provision of fly-nets for horses at work is ample protection against these flies.

Of the genus *Chrysops*, all of which have pictured wings, *Chrysops moerens* Walk. (Fig. 6) and *Chrysops fulvaster* O.S. were the only two species found during the summer. Around the sloughs near Dundurn the former was very common. In the grass at the margins of these sloughs, they were readily disturbed as one walked along and they were not slow to attack human beings. The latter was only encountered in low swampy ground and was taken in large numbers. It does not hesitate to attack those who intrude in its preserves.

The delicate, grayish-black breeze-fly *Haematopota americana* O.S., with grayish pictured wings, is occasionally found around horses and readily settles on people in the vicinity. In its flight it makes very little noise and is very quiet and unobtrusive as it settles to bite.

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* Phinotas oil is a preparation made by the Phinotas Chemical Company of New York and is a powerful larvicide. The great objection to its use is that fish also succumb to its poisonous properties. (Smith, J. B., Mosquitoes of New Jersey, Trenton, N.J., 1904, pp. 128, 129).

For those horse flies which attack the ears of horses nets will be found useful as a protection. In cases where the eyes are also attacked, the ears and skin about the eyes may be smeared with the following repellent solution as recommended in Bull. No. 93, Agr. Exper. Station, Univ. Minn., 1905:—Pine tar one gallon; kerosene, or fish oil, or crude carbolic acid one quart; powdered sulphur two pounds. This mixture, also, applied to wounds made by barbed wire or otherwise, will ward off those flies which might be disposed to lay their eggs therein.

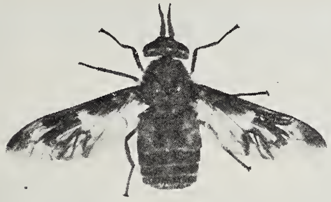


FIG. 6.—The breeze-fly or deer-fly, *Chrysops oerens* commonly occurring near sloughs and attacking human beings and live stock. In its flight it makes less noise than the "bull-dog" fly. (Original.)

In Russia, Portchinsky* has taken advantage of the habits of horse-flies of concentrating in large numbers in damp places and near pools at which they drink. He found that during the heat of the day the flies rapidly skim the surface of the water in order to drink, only the underside of their bodies touching the water. Very good results were obtained by pouring kerosene on the surface of these pools of stagnant water and it was found that these "pools of death," as he called them, soon became covered with the dead bodies of horse-flies which frequented them. Contact with the kerosene, which adhered to their bodies, rapidly poisoned or suffocated the flies. The author advocates the use of "pools of death" in pastures where cattle graze, but they should always be securely fenced off.

In Canada, Mr. Norman Criddle, Field Officer of the Entomological Branch, made independent observations and experiments in 1914 and 1916 in Manitoba similar to those of Portchinsky in Russia. In 1914 he noticed the habits which horse-flies display of making rapid, skimming flights along the surface of exposed water. Like the Russian author, too, he found that the great majority of the flies that thus behaved were males, only a very small percentage of females coming to drink at open water. In experiments covering a period of 5 days in a pool but one square metre in surface area, Portchinsky counted in all 1,967 horse-flies of which only 14 per cent were females.

My thanks are due to Professor J. S. Hine, Ohio State University, who kindly confirmed the identification of some of the specimens of horse-flies and also named others about which there was some uncertainty. I am also indebted to Professor T. N. Willing, University of Saskatchewan, Saskatoon, Sask., for the loan of the photograph for figure No. 4.

Dr. L. O. Howard, Bureau of Entomology, Washington, D.C., was the first to attract attention to Portchinsky's discovery in "A Remedy for Gadflies: Portchinsky's Recent Discovery in Russia, with some American Observations." This was published in Bulletin No. 20, Division of Entomology. United States Department of Agriculture, 1899. The Russian author had previously published an account of his findings this same year.

* Portchinsky, L. Tabanidæ and the Simplest Methods of Destroying them. Memoirs of the Bureau of Entomology of the Scientific Committee of the Central Board of Land Administration and Agriculture, Petrograd, vol. ii, No. 8, 1915. Abstract in Rev. App. Entom. Ser. B., vol. III, 1915, pp. 195-196, 1916.

THE DAIRY AND COLD STORAGE BRANCH

THE DAIRY PRODUCE COMMISSION

IN Volume IV, and on page 754, of THE AGRICULTURAL GAZETTE, an account is given of the organization of the Cheese Commission, consisting for Canada of two members, namely, Messrs, Jas. Alexander, exporter of Montreal, J. A. Ruddick, Dairy and Cold Storage Commissioner for the Dominion, appointed by the Minister of Agriculture, and Jas. McGowan, of London, England, and in the number of THE GAZETTE for March (Vol. V), pages 242 to 244, details are given of the work of the Commission from the time of its appointment to the end of the year, 1917. The Cheese Commission, as it formerly existed, has been succeeded by the Dairy Produce Commission, an organization constituted as follows: Mr. Arthur J. Mills, representing the British Ministry of Food; Mr. J. A. Ruddick, representing the Dominion Department of Agriculture; Dr. James W. Robertson, representing the Canada Food Board; Messrs. Jas. Donaldson, A. Gerin, and Jas. Alexander, representing the producers and the trade. At a meeting of the newly organized commission held in Montreal it was announced that the Commission had been authorized to act for the British Ministry of Food in connection with the exportable surplus of Canadian cheese, condensed milk, and butter of the make of the season of 1918.

The price agreed to for cheese, as compared with an average of 21¾c. per lb. in 1917, is 23c. per lb. for No. 1 grade, f.o.b. steamer at Montreal; 22½c. per lb. for No. 2 grade, and 22c. for No. 3 grade.

A committee was appointed to work out the question of a relative price for condensed milk, and the price of butter will be arranged as soon as there is a surplus available for export.

The advantages of the arrangement to the cheese industry of Canada, representing an estimated value of $40,000,000, were shown and explained in the article on the work of the Cheese Commission in the March GAZETTE previously referred to. It was mentioned at the meeting that at the present time the allied buyers are being offered United States cheese of this season's make at 22c., f.o.b. New York.

BUTTER-FAT COMPETITIONS

BY C. F. WHITLEY, IN CHARGE OF DAIRY RECORDS

FOR two years Butter Fat Competitions have been carried out jointly by the Scotsburn Creamery and the Scotsburn Dairy Record Centre at Scotsburn, N.S. In addition to open classes for which four prizes were offered a number of specials were provided by individual farmers and business men. Special trophies were awarded for the highest producing cows from pure-bred sires and for cows showing the greatest average persistency in production of fat during the year. There was also a prize for the school, a scholar of which presented the best essay on dairying. At the end of the season reports were sent to each of the competitors showing the average amount of butter fat given by the cows of his herd and recommending the course to be followed for its improvement. A similar competition will be held this year.

THE LIVE STOCK BRANCH

THE CARLOT POLICY FOR THE CURRENT YEAR

THE carlot policy conducted by the Live Stock Branch of the Dominion, inaugurated in 1916, is being conducted this year with some slight changes in the conditions that have governed in the last two years. Under the policy, the Branch still pays the reasonable travelling expenses of a farmer residing in Canada, or his authorized agent, who purchases one or more carloads of breeding stock of cattle, sheep, or hogs. The policy is confined to purchases of female breeding stock, or of feeding and stocker cattle, made at any of the stockyards in Western Canada at which a representative of the Live Stock Branch is located. When the stock is purchased for speculative purposes, no assistance is rendered. A carlot must consist of not less than 20 head of cattle, 40 sheep, or 40 hogs. In a mixed shipment, two sheep or two hogs are accepted as equivalent to one head of cattle. An intending purchaser, to take advantage of the policy, must formally apply to the representative of the branch at his nearest stockyard before commencing to purchase, and he will be given a certificate authorizing assistance. Expenses will be allowed covering railway transportation from the home of the purchaser to the stockyard at which the purchase is made, also hotel expenses for a reasonable time. Parties purchasing female breeding stock under the terms of the carlot policy who comply with the terms of the free freight policy of the branch, are entitled to the benefit of both policies on one shipment. The representative of the branch acts in an advisory capacity to the purchaser if so desired, but the actual purchasing must be done by the buyer himself, or by his authorized agent. The representatives of the Branch at the different stock-yards are D. M. Johnson, St. Boniface, Man.; E. W. Jones, Calgary, Alta.; and C. E. Bain, Edmonton, Alta.

BOYS' AND GIRLS' COMPETITIONS

THE Calf and Pig Competitions for Boys and Girls held in 1917 under the supervision of the Live Stock Branch, in co-operation with the Canadian Bankers' Association, will be repeated this year. The rules and regulations are practically the same as given in Vol. IV of THE AGRICULTURAL GAZETTE, page 766, with the additional suggestion, that, in districts in which there are school fairs, the prizes should be there awarded, unless, preferably, they should be awarded at the fall fair. A receipted statement must be forwarded to the Secretary of the Canadian Bankers' Association, Montreal, not later than December 15th. In Class 2, the description of pigs eligible for entry, instead of reading as in 1917, "Bacon type, Pure Bred or Grade," this year reads "Pure bred or Grade." The exhibitors must all be under 17 years of age. The calves and pigs entered in the competition must have been fed at least six weeks prior to being shown by the boys and girls who exhibit them.

THE SEED BRANCH

SEED INSPECTION AND SEED TESTING IN APRIL

BY J. R. DYMOND, B.A., SEED ANALYST

THAT much preventible loss is caused by the unwitting use of dead or impure seed must be the conclusion of any one who goes through the records of the test made on samples of seed received from farmers and merchants at the seed laboratory.

A red clover sample recently received from a retail merchant was suspected of being low in vitality, and was submitted to germination test. The test showed that only 8 per cent of the seed was capable of germination even under the favourable conditions provided in a germinating chamber.

One of the seed inspectors not long ago found a lot of 8 bags of alsike in the possession of a retailer. The seed had not yet been offered for sale, but was apparently held for that purpose. A germination test of it showed that only 10 per cent of the seed was vital. It is probable that had there been no seed inspection and seed testing service, these lots of seed would have been used for seeding. Nothing but crop failure could result from the use of such seed.

Another inspector found a dealer selling as seed, oats containing 934 noxious weed seeds per pound as follows: Western false flax, 96; stickseed, 2; wild oats, 368; stinkweed, 2; ball mustard, 448; wild mustard, 2; hare's-ear mustard, 16. Only 55% of this grain was found to be vital.

That many lots of seed as foul with impurities and as low in vitality as the lots mentioned are sown each year by farmers who do not suspect any defect in it, is not to be doubted. The only way to be certain of the quality of seed one intends to use is by means of a proper purity and vitality test.

During the month of April 1959 samples of seed were tested for farmers, merchants, and others at the Ottawa laboratory; of these 665 were sent by farmers.

The following table gives the num- of samples of the different kinds of seeds for which grades are provided, received from farmers, merchants, and institutions, and also the number of samples belonging to the various grades:—

	Timothy	Red Clover	Alsike	Alfalfa	Mixture
Samples received	458	409	182	23	78
Received from farmers	180	117	56	5	37
" " merchants	272	284	124	17	39
" " institutions	6	8	2	1	2
Grading No. 1	51	79	23	9	4
" No. 2	168	115	52	9	32
" No. 3	96	116	46	3	16
" rejected	136	88	59	—	24
Other reports	2	6	1	1	—

The results of the germination tests reported during the month are summarized in the following table:—

	Wheat	Oats	Barley	Corn	Peas	Beans	Mangels
Samples reported	132	46	42	207	17	29	19
Average per cent germination	93.3	90.1	91.4	55.8	92.5	77	62.2
Number germinating up to standard of good seed	98	153	22	32	12	17	2
Number germinating below ⅔ standard of good seed	2	16	....	99	....	5	7

PART II
Provincial Departments of Agriculture

THE DISTRIBUTION OF MALE ANIMALS

The quality of the live stock in Canada has undoubtedly been much improved as a result of governmental assistance and organization, both federal and provincial, in the distribution of pure-bred male animals. As the system governing this work varies in the different provinces, it was considered desirable to publish in The Agricultural Gazette, as far as possible, the course being pursued by each province in this direction. In order to secure uniform statements for comparative study, it was suggested that the information desired be given under the following heads:

1. A brief history of the movement.
2. The organization that exists in the provinces for this work.
3. The connection between the Department and the organizations, with the assistance granted to each, with conditions for securing assistance.
4. The method of selecting and supplying the animals, including arrangements for exchange.
5. To what extent, if any, is community breeding encouraged, that is, the confinement of a breed to a district.
6. The extent of the distribution for a single year or a series of years.
7. The modifications that have been decided upon or are being considered for this year.

NOVA SCOTIA

BY F. L. FULLER, SUPERINTENDENT OF AGRICULTURAL SOCIETIES

PRIOR to the year 1864 the agricultural affairs of the province were under the management of a body of men called the Central Board of Agriculture. Under this board a number of agricultural organizations received Government aid for importation of live stock, improved farm machinery, new and improved varieties of seeds, and for holding shows and exhibitions.

HISTORY OF THE IMPROVEMENT

During that year our agricultural Acts were amended in order to provide for the appointment of a Secretary for Agriculture. The duty of this appointee was to promote the agricultural affairs of the province in general, with a special view to increasing the efficiency of our agricultural organizations. Under the amended Act agricultural societies could be formed in any section of the province where not less than forty members were secured who subscribed not less than $1.00 each. These organizations received regular annual grants in proportion to the amount subscribed. All existing agricultural organizations were allowed to participate in the grant, providing they complied with the conditions. At the close of that year there were thirty-seven societies, having a membership of 1,744 and a total subscription of $1,860.00, and receiving a total provincial grant of $3,010.00. This arrangement continued until 1893, when there were 81 societies with 4,068 members and $5,050.00 subscribed with a grant of $6,310.00. In that year the Acts were again amended, admitting agricultural societies with 25 members, providing the amount subscribed was not less than $40.00, and the grant was increased to $8,000.00 per year. This annual grant remained fixed until the year 1898, when it was increased to $10,000.00 per annum.

In the year 1907 the offices of Secretary for Agriculture and Principal of the College of Agriculture were combined, and in order to give more assistance to agricultural societies a Superintendent of agricultural societies was appointed. At that time there were 160 agricultural societies in the province with a membership of 7,849, subscribing $15,000.00. At the present time there are 271 agricultural societies with 10,974 members and $22,407.00 subscribed.

Recent changes in the agricultural Acts which have had a tendency to popularize the movement are:

(a) Allowing 15 (or more) members to form an organization, providing the subscriptions are not less than $40.00;

(b) Granting each agricultural society $40.00 out of the amount provided, and dividing the balance ratably among the societies which subscribe more than $40.00;

(c) Confining the expenditure of the society funds to the purchasing of pure-bred live stock or holding exhibitions;

(d) The withholding of $1,000.00 from the total grant (now $1,500.00) for the purpose of aiding societies that have the misfortune to lose animals through accident or disease;

(e) Giving a bonus to agricultural societies constructing a paddock for exercising their bulls;

(f) Placing an Act on our statute books making it illegal for any person to offer for public service any unregistered sire within the boundaries of an agricultural society;

(g) A personal interest in each agricultural society with inspection as often as possible.

ATTITUDE OF THE AGRICULTURAL SOCIETIES

Considered briefly the other information desired may be given as follows:

Agricultural societies are the only organizations in our province receiving direct assistance for the improvement of live stock. The policy of the Department is to encourage in every possible way the improvement of our animals. Large importations have been made and the animals sold at auction under bonds to be kept in the province. Liberal grants are given to exhibitions. High class animals from the college herd are sold at reasonable prices.

Agricultural societies through the superintendent are responsible to the Department of Agriculture. In order to qualify for the grant societies must make an annual subscription list "duly attested to" containing at least fifteen names and an amount not less than $40.00. They must also submit annually a copy of their financial statement giving all the items of receipt and expenditure. The superintendent may withhold the grant on account of any irregularities. The grant may also be withheld where animals purchased by societies are not of a sufficiently high quality. Applications for organization of new societies must receive the approval of the Lieutenant-Governor-in-Council.

While the selection of animals lies with the societies the superintendent, on request, makes selections "free of charge." A list of all pure-bred animals for sale is always obtainable from the superintendent. Where exchanges are desired, the superintendent furnishes records of breeding, records of production of ancestors, and a report on the character of the offspring of the sires it is desired to exchange.

Community breeding is proving very successful. In several sections we have groups of agricultural societies that keep one breed and have agreed to exchange all sires of proven merit.

There are about four hundred bulls owned by agricultural societies in the province, about one-third of which are replaced or exchanged each year. There are also a large number of boars and rams owned by the societies.

Beginning this year arrangements are being made for the granting of $25.00 to agricultural societies constructing a paddock adjoining a stable, or containing a shed where a "box-stall" is provided, so that the animal can run in and out at will, summer or winter.

A measure is now under consideration which will undoubtedly receive the sanction of our Legislature, authorizing the Superintendent of Agricultural Societies to withhold the grant from agricultural societies which change from one breed of sires to another without the consent of the Department of Agriculture.

NEW BRUNSWICK

BY THOS. HETHERINGTON, B.S.A., SUPERINTENDENT OF LIVE STOCK

IN February, 1915, the provincial Department of Agriculture inaugurated a scheme for the purchase and distribution of pure-bred bulls and cows. This was the first comprehensive attempt made to encourage the use of pure-bred sires. Various efforts had been made to encourage in a small way the use of pure-bred males and females, but without any appreciable response on the part of the farmers, and, the schemes being local in nature, did not leave any particular impress on the native stock of the province as a whole. The present system of bonusing, i.e., that which began in 1915, with modifications, practically covers the entire province and the results are just becoming apparent in the younger stock.

ORGANIZATIONS

At the present time there are 145 agricultural societies in operation in New Brunswick, and the number is increasing each year. It is to these farmers' organizations that the provincial Department of Agriculture distributes bonus money for the encouragement of the use of pure-bred bulls.

BONUS REGULATIONS

Following is an outline of the regulations governing the bonusing of pure-bred bulls:—

1. The stock shall be bought and sold under the direction of an agricultural society.
2. Societies shall notify the Department before purchasing animals in order to receive the bonus on such stock.
3. Animals shall be bought subject to the approval of an officer of the Department and must be bought subject to the tuberculin test. Preference will be given to animals from dams having satisfactory performance records. No animal under one year of age shall be eligible for a bonus.
4. Animals purchased with the aid of the Department shall be kept for the use of the members of that society only. The society shall make all arrangements for caring for the animal and shall agree to buy only bulls of the same breed and use them in that locality for a period of at least ten years.

5. Assistance will not be given to more than two breeds in any one society. The breeds selected shall be determined by a majority vote of the members of the society at a regular or special meeting and shall be subject to the approval of the Department of Agriculture. Notice of the vote to be taken shall be given to each member at least one week prior to the meeting.
6. No society shall receive a bonus on more than five bulls in any one year.
7. The Department shall be notified if a society wishes to dispose of one of these animals, and shall be given a thirty days' option to purchase.
8. Under the above regulations the Department shall pay an initial bonus of 20 per cent on animals costing more than $50. A bonus shall not be paid on animals costing less than $50. Additional yearly bonus of 10 per cent of the cost of the animals shall be paid for each year the bull is kept for breeding purposes, provided it is kept in satisfactory condition and passes an animal inspection.
9. These regulations shall be considered as in force from February 1st, 1918, and shall cancel all other regulations.

FORM OF APPLICATION

Following is the application form for the bonus on pure-bred cattle that has to be filled up and forwarded to the Department:

APPLICATION FORM FOR BONUS ON PURE-BRED CATTLE

Society..........................Number.........
Breed..............Registration Number..........
Registration Name...............................
Breeder......................Address...........
Purchase Price........Date Purchased............
Name of Person Keeping Animal...................
Address...
Nearest R. R. Station...........................
Certified by....................................
President....................Secretary..........
Purchase was authorized at the regular meeting of the Society held on..................................
Secretary.......................
First bonus received when.......................
Second " " "....................................
Third " " "....................................
Inspection made.................................
Inspector.......................

SELECTION AND SUPPLY

The method adopted of selecting, supplying, and arranging for exchange is as follows—Agricultural societies wishing to secure a pure-bred bull must notify the Live Stock Division. This Division keeps in close touch with all the breeders of the province, also those of adjoining provinces, and in this way when an application comes in for an animal, the Live Stock Division is in a position to recommend certain animals; likewise the Live Stock Division keeps in touch with the agricultural societies, and, when a society is finished with an animal, arrangements can be made to have it transferred to another district. We have considerable difficulty to prevail on agricultural societies to purchase aged bulls; however this discrimination is becoming less and less apparent each year. As far as possible we try to purchase from New Brunswick breeders, but we do not hesitate to import stock from other provinces when the New Brunswick stock is not up to the standard. The number of breeders in this province is limited, consequently we have to depend to a greater or lesser extent upon outside sources.

COMMUNITY BREEDING

Community breeding in New Brunswick has not made the advance its importance would justify, however at the present time we are making a special feature of this work. This year about twenty swine breeders' clubs have been organized in the province. These clubs are established in districts, and will gradually extend to adjoining districts, and in this way practical demonstration in community breeding is given. Next year we plan to add sheep, and, later on, possibly cattle.

EXTENT OF DISTRIBUTION

In the year 1916, 40 pure-bred animals were bonused by the provincial Department, consisting of 16 Shorthorns, 15 Ayrshires, and 9 Holsteins. In 1917 bonuses were granted to 77 pure-bred animals, consisting of 30 Shorthorns, 33 Ayrshires, and 14 Holsteins. Judging from present indications the number of animals bonused for 1918, as compared with 1917, will be practically double.

FUTURE PLANS

Modifications planned for and being considered:—(a) The Live Stock Division is arranging for a dispersal sale of pure-bred males, bulls, rams, and boars in the fall of 1918 in the city of Fredericton; the provincial Government pays the freight on stock consigned to this sale. (b) Next year we hope to be able to take advantage of the federal assistance re the bonus of stallions. With this in view we are getting in touch with all the promising districts, with a view to co-operating with the federal Department.

QUEBEC

BY OCTAVE LESSARD, SECRETARY OF THE COUNCIL OF AGRICULTURE

THE Quebec Department of Agriculture, always anxious to increase agricultural production has seized every opportunity to encourage the farmers to produce to the limit of their capacity; but the farmers have been specially advised to breed good live stock, in order to continually improve their herds. This was the main object of the farmers' clubs organization.

In 1893, an Act was adopted, authorizing the organization, in each parish of the province, of a farmers' club, to which an annual grant would be given, and this practical move, which was to give a new impulse to the breeding of good breeding animals, increase the number of herds, and improve their quality, was fully appreciated by the farmers. Special attention was given to cattle, and this contributed, to a large entent, to the progress of dairying.

Through the close supervision exercised, the Department is able to judge of the progress of the clubs, and prevent possible mistakes. Each year a detailed report is forwarded to the Minister, who checks the accuracy of the same, and classes it accordingly. The programme of work is also submitted for approval to the Minister, who may grant, as he sees fit, sufficient financial assistance to enable the clubs to purchase good breeding animals, or to take care of those which they already have.

THE DEPARTMENT'S ASSISTANCE

The Department now helps the Live Stock Associations, which purchase, in the province or elsewhere, superior breeding animals which are later sold by auction to the farmers' clubs, or to private farmers, after being examined by competent inspectors and declared healthy and fit for breeding. Cattle are always tested with tuberculine, in order to protect the herd against tuberculosis. Farmers and clubs are strongly urged to keep the same breed, provided the animals are satisfactory, and are considered quite fit for breeding. Over $60,000 are spent every year by the clubs for the purchase and maintenance of breeding animals.

In order to supervise the breeding operations, inspectors are appointed by the Minister, and these inspectors visit occasionally the herds of the various parishes, and give, as required, advice to the farmers and to the keepers of male animals belonging to the clubs. The object of such visits and instructions is to eliminate the defects which too often appear in the various methods of breeding. These inspectors make a report of their visits, and if it is found that the caretakers do not treat as they should the animals in their charge, notice is given to the

Board of Directors to see that the advice given is closely followed. If such instructions remain unheeded by the caretaker, the Minister orders the club to hand over these animals to some other caretaker. Again, if it is observed that these animals are unfit for breeding, they are slaughtered for meat.

Such inspectors are chosen amongst competent men, in ever-increasing number. They do a good part of the work which district representatives have to do, regarding the supervision of herds and the selection of breeding animals in the counties where there are no such representatives.

BREEDING ANIMALS KEPT BY CLUBS

The following table shows the breeds and number of breeding animals kept by the farmers' clubs during the year 1916:—

CATTLE		PIGS		SHEEP	
Ayrshires	723	Chesters	325	Lincolns	16
Holsteins	122	Tamworths	12	Leicesters	335
French-Canadians	54	Berkshires	30	Shropshires	52
Shorthorn	136	Yorkshires	377	Oxford Downs	60
Jerseys	5	Poland Chinas	3	Cotswolds	25
Herefords	6			Hampshires	11
				Dorsets	3

The practical methods followed by the clubs have been a great object lesson for farmers. Private enterprise has been stimulated, and there are now in the province of Quebec a fairly large number of very good breeding animals in cattle, pigs, and sheep. The Department of Agriculture helps such private enterprise by sending, upon request, a veterinian to examine such animals and test those of the bovine species with tuberculin.

INCREASING PORK PRODUCTION

The Department spares no effort to encourage production in a general way, but just now a special effort is being made to increase the production of pork. A few hundred sows, served by registered Yorkshire boars, have been recently purchased by the Department. They will be sold to farmers who desire to raise more pigs. The Department considers itself well repaid for its trouble by seeing the farmers eagerly accepting its suggestions, and taking up the active work which is required of them: to draw as much as possible from the soil in order to give an anxious world the food of which there is a growing scarcity.

ONTARIO

BY W. BERT ROADHOUSE, DEPUTY MINISTER OF AGRICULTURE

IN 1912 the Ontario Department of Agriculture adopted a plan for the distribution of pure-bred sires in districts in New Ontario. It was felt that this would be an effective means of improving the stock in the newer sections, and that in this way a decided benefit would be conferred, not only upon the individual settlers, but on the district as well. In order to secure the cooperation of the farmers concerned, it was decided that male animals would only be placed with local Live Stock Improvement Associations, which were to be organized with a membership of ten or more, and which were to undertake the management and the maintenance of the stock supplied. The plan proved to be most acceptable, and in all upwards of 25 of these local associations were organized and received pure-bred sires of all classes—horses, cattle, sheep, and swine.

After the plan had been in operation for a little over a year, the Live Stock Commissioner for Canada adopted the idea and proceeded to draw up regulations for its application throughout the various sparsely settled parts of the Dominion. As it was obviously undesirable that the same work should be carried on by both federal and provincial Governments, this Department entered into an arrangement with the Live Stock Commissioner for Canada by which the associations which had been organized and the stock held were incorporated in the general federal scheme. Since that time the Department has not carried on work of this nature. On a few occasions, however, a carload of pure-bred stock has been shipped to points in New Ontario and sold direct to the settlers.

MANITOBA

BY J. H. EVANS, DEPUTY MINISTER OF AGRICULTURE

RELATIVE to the distribution of male animals in the province of Manitoba, this work has been carried on entirely under the Live Stock Branch of the Dominion Department of Agriculture. The only assistance which the provincial Department of Agriculture has rendered has been in bringing buyer and seller together. This work has been carried on to a considerable degree. Provision also was made in the new Agricultural Societies Act, whereby groups can receive assistance for importing and owning pure-bred live stock; that is an agricultural society can own sires for the use of their members under the provisions of the new Agricultural Societies Act and receive assistance from our own Department.

SASKATCHEWAN

BY A. M. SHAW, B.S.A., LIVE STOCK COMMISSIONER

THE distribution of pure-bred sires and also female cattle was first taken over by the Saskatchewan Department of Agriculture in 1913. Owing to the large demand there appeared to be for live stock in general, an Act known as "The Live Stock Purchase and Sale Act" was passed in December, 1913, providing for the expenditure of $500,000 for the purchase of live stock for distribution among Saskatchewan farmers. Fifty thousand dollars of this amount was to be expended annually for ten years. Under this policy cattle, sheep, and swine were sold to *bona fidé* Saskatchewan farmers on credit terms. Horses are not handled under this Act.

In accordance with the regulations governing the Live Stock Purchase and Sale Act, farmers wishing to secure stock on credit terms have to fill out an application form stating the number and kind of stock required, also giving some information with regard to their farming operations and their ability to care for this stock. Each applicant requires the recommendation of one of the local farmers' organizations. Pure-bred bulls can thus be purchased on a quarter-cash basis. Rams and boars are supplied on a half cash basis, the balance is covered by lien notes bearing interest at 6 per cent and falling due in two payments, one-half the end of the current year and one-half the end of the succeeding 12 months.

The live stock purchasing agent of this Department secures the necessary animals to fill orders as they are received. When possible these are purchased in the province, but it is occasionally found necessary to import car-loads from outside. All expenses incurred in purchasing and shipping have to be added to the cost of the stock supplied.

Since the Act has been in force the following bulls have been supplied to farmers, most of which have been sold on credit terms:

1914	41 bulls
1915	84 "
1916	150 bulls
1917	170 "

Also about one hundred rams and a few boars.

The Saskatchewan cattle, horse, sheep, and swine breeders' associations have been holding annual sales of pure-bred stock under the auspices of this Department for several years. These associations all obtain an annual grant to assist them in this work. These sales afford the farmers of the province a central market for the purchase and sale of their registered stock. Many of the pure-bred sires purchased at these sales are secured on credit terms through this Department under the Live Stock Purchase and Sale Act.

Since these association sales have been organized, about 1,000 bulls, 475 rams, and 140 boars have changed hands.

ALBERTA

BY JAS. McCAIG, M.A., EDITOR OF PUBLICATIONS

THE Department of Agriculture for Alberta does not distribute male animals to associations of farmers. The development of the pure-bred stock industry has been quite rapid in the province, and there is now available a supply of good males in all kinds of live, stock including horses, cattle, sheep and swine from our own breeders. Activity in the establishment of breeding herds of cattle is so great at the present time, however, that a good many males and females, also of the beef breeds, have been brought in, chiefly from Ontario. The increase in cattle stock within the past eighteen months has been very rapid. Apart from these conditions due to the war, we expect that our own flocks and herds will supply the demand for male animals, and these are available to those requiring them on the ordinary commercial basis on which other requirements are obtained.

The Department, however, has for the past two seasons organized the credit resources of settlers to the extent of guaranteeing loans for the purchase of both male and female stock by small co-operative associations of farmers. The provincial demonstration farms produce a considerable surplus of male animals in cattle, sheep, and swine, which are available for purchase at reasonable rates to farmers.

THE KEEPING OF PIGS IN URBAN CENTRES

In furtherance of the movement for increased production, much attention has been turned towards the raising of hogs, not alone on the farm, but in the neighbourhood of city and town dwellings. In carrying out this policy it has been necessary to pay special attention to the requirements of sanitation. There are federal and provincial enactments that govern in the premises, and in addition many municipalities have laws and regulations of their own. These laws and regulations refer to the surroundings, and, especially, to the feeding of garbage. As a subject of wide importance to the welfare of the entire community, it was thought advisable that the different sections of the country should be informed of each other's course. In the following series of articles efforts have been made to provide such general enlightenment.

NOVA SCOTIA

BY W. H. HATTIE, M.D., PROVINCIAL HEALTH OFFICER

I HAVE to say that our Public Health Act does not contain anything with reference to the keeping of pigs in centres of population. This matter is controlled by regulations made by various local boards of health. When I have been asked relative to modification of any of these local regulations, I have expressed the opinion that every possible concession should be made short of anything which might constitute a real menace or a nuisance.

QUEBEC

BY ELZEARD PELLETIER, SECRETARY DIRECTOR, SUPERIOR BOARD OF HEALTH

NEITHER the Act nor the bylaws prohibit "the keeping of pigs in centres of populations." Article 44 of the bylaws only requires that they be well kept.

ONTARIO

BY JOHN W. S. McCULLOUGH, M.D., CHIEF OFFICER, PROVINCIAL BOARD OF HEALTH

IN regard to the keeping of swine sub-section 20 of section 115 of the Public Health Act provides "Swine shall not be kept within the limits of the municipality, except in pens, with floors kept free from standing water, and regularly cleansed and disinfected, and distant at least one hundred feet from any dwelling-house, school house, or church."

MANITOBA

BY A. J. DOUGLAS, MEDICAL HEALTH OFFICER, WINNIPEG

THE Public Health Act of the province of Manitoba provides that no person shall erect, continue to use, or maintain a building, structure, or place for the exercise of a trade, employment, or business, or for the keeping or feeding of animals, which by occasioning noxious exhalations or offensive smell becomes injurious to the comfort or health of individuals or of the public. The Act does not specifically mention pigs, which, of course, it is intended shall be covered. It is not contemplated that any change shall be made in either the Public Health Act of Manitoba, or the city of Winnipeg bylaw, with a view to facilitating the keeping of hogs in the city of Winnipeg. Negotiations have been entered into by the Winnipeg city council with a firm who intend to establish a sorting plant at the city garbage incinerator, and to make use of all garbage and other refuse collected.

BY M. S. FRASER, M.D., SECRETARY, MANITOBA BOARD OF HEALTH

THE question of the Public Health Act in this province in relation to the subject of keeping pigs in centres of population has not been placed before the Board of Health as a body. To others who have brought the matter to my attention I have given what I believe to be the opinion of the Board in this matter.

The keeping of pigs in centres of population is a matter left to the discretion of the municipalities concerned. No action is contemplated by the Board of Health, unless a nuisance is created. In the latter event, of course, action would require to be taken, as the creation of a nuisance would mean insanitary conditions which would be a menace to health and especially to child life where ever such a nuisance existed.

I have suggested that, with the propaganda for the increase of production in pigs, there should also be the definite information given that they can be kept without being a nuisance, and, therefore, should not in any way be contrary to the provisions of the Public Health Act.

SASKATCHEWAN

BY M. M. SEYMOUR, M.D., COMMISSIONER OF PUBLIC HEALTH

THE production of hogs is a matter which is causing a great deal of agitation, and, no doubt, there is occasion for raising them in much larger numbers, if bacon, ham, lard, etc., are to be supplied in adequate quantities, not only to our troops, but also for home consumption.

No doubt, some of those who have taken up this particular subject, and have advocated that every family should raise a pig, have done so without considering under what conditions they should be kept, as to housing and feeding.

All recognize the necessity for greater production, but not all have requisite accommodation or the means to successfully breed, raise, and feed with success or profit.

Some misconception exists as to

where such animals can be kept, and many expressions are voiced that the provincial regulations prohibit their keeping in cities, towns, and villages, thereby acting as a deterrent to the success of the food production movement.

This is entirely wrong, as a reading of the requirements of the regulations of the Bureau of Public Health will show.

The clauses of the regulations relating to the keeping of hogs are as follows:—

> The keeping of swine or hogs shall be prohibited within the limits of any city, town or village, unless in pens not nearer than fifty (50) yards from any dwelling house.
>
> Pens to have floors kept free from standing water, and regularly cleansed and disinfected.
>
> No hog pens shall be permitted in any cow or other stable.

These provisions are considered advisable to prevent the creating of a nuisance which might otherwise detrimentally affect the health of residents.

CIVIC REGULATIONS

Another matter vitally affecting the public health is the feeding to hogs of hotel, restaurant, and other table wastes, the value of which as food for hogs is recognized, but the use of which is controlled by a bulletin of the bureau.

The bulletin, re feeding of waste food to swine, reads as follows:—

> In order to control and regulate the practice of collecting, removing, and feeding hotel, restaurant, and other table wastes to swine, it is desirable that the conditions under which the local Medical Health Officers shall sanction the use of such material be defined.
>
> As disease may be contracted by the feeding of certain waste products, containing germs of disease, or in a state of putrefaction, certain restrictions must necessarily be imposed to insure that only materials in a sound and fresh state be permitted to be removed and fed.
>
> With this object, and to prevent needless waste of valuable food products, the use of such may be permitted for food to swine, if collected, stored and fed within twenty-four (24) hours after being discarded from the table or kitchen and boiled for thirty (30) minutes. The waste food shall be collected and stored in covered receptacles, and kept under the care of parties who own it, until it is taken or removed by the party who has a permit so to do.
>
> No slops or swill of any nature whatever may be mixed with such material, as liquids hasten the process of putrefaction, and produce gases which are dangerous and offensive, nor shall tin cans be permitted.
>
> Parties wishing to use such material as feed for swine, must have the written consent of the local Medical Health Officer to do so, and any infringement of the conditions he may require will cancel the privilege, in which case the material will be treated as household waste and removed to the nuisance ground.

IN THE CITY OF SASKATOON

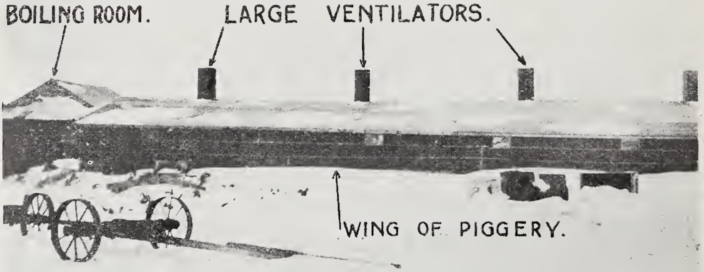
BY ARTHUR WILSON, MEDICAL HEALTH OFFICER, AND W. H. OOME, CITY VETERINARY INSPECTOR, SASKATOON

SASKATOON, Saskatchewan, is one of the cities that has a by-law regarding the collection and treating of garbage for the feeding of swine that has proven workable. By its provision the city charges each collector a $25 permit fee and inspects his premises twice a month. The Veterinary Director General's Branch also licenses and inspects these places and sees that they are kept in a sanitary condition for the hogs.

This municipality has co-operated without any friction in regard to this matter with the Dominion Veterinary General's Branch. There are from 500 to 800 hogs fed all the time, and during three months there were over 400 hogs fattened upon boiled garbage mixed with a small amount of grain and sold from both places. A conservative estimate would at least be 1,600 hogs fattened and marketed during 1917. This is quite an addition to the bacon supply for the year from one small city, and all from garbage formerly removed to the nuisance ground at the city's expense.

The advantage of this method of feeding boiled garbage to hogs as it is carried out in our city are:—

(*a*) The method is easily adopted by the City Council. The business is kept under strict control by the Health Department, and the conditions are such that there is no danger to public health.



PIGGERY AND FOOD-BOILING ROOM, SASKATOON

(*b*) The Council invests no money. They receive the permit fees and have their garbage removed from hotels, restaurants, boarding houses, markets and other food places at no cost to the ratepayers.

(*c*) There is practically no danger of hog cholera as long as the city authorities strictly supervise the boiling and warn the proprietor of the piggery that he will receive no compensation for the slaughter of hogs with hog cholera due to his careless method of boiling the food, or the feeding of raw garbage.

(*d*) The system is clean, sanitary, and gives satisfaction to the restaurant and hotel men, because clean garbage cans must be left conveniently in their kitchens for the garbage.

(*e*) The business is profitable. Men are not only anxious to get into the business but are very willing to comply with the bylaw. They will, in protection of their business, report persons who may be removing garbage without a permit.

In Saskatoon the feeding of boiled garbage to hogs according to the by-law which follows has proven eminently successful, and if this method were to be put into effect in every town and city in Canada (which could very easily be done), the hog production could be very greatly increased this summer:—

THE BY-LAW

For the purpose of this by-law the word "garbage" shall be deemed to mean any animal or vegetable refuse from food which has been prepared or intended for human consumption.

Every permit holder shall furnish each hotel, boarding house or restaurant from which he removes garbage with sufficient metallic cans of a type approved by the Medical Health Officer, and having the name of the permit holder painted thereon for the reception of all such garbage.

All such garbage cans shall be kept inside the kitchen of the hotel, restaurant or boarding house, and when full the permit holder shall cause them to be replaced by clean cans and removed therefrom bodily and conveyed to the place of boiling hereinafter mentioned.

All garbage collected as aforesaid shall be removed to some place outside the city and there boiled for thirty minutes, after which the same may be fed to swine or other animals.

When boiled the garbage shall be so kept as to prevent contamination until actually fed.

All vessels and utensils used in connection with the collection, boiling, storing or handling of garbage shall be kept in a clean state.

No unboiled garbage shall be allowed to accumulate on the premises where the boiling takes place, but all garbage shall be treated immediately after it is received. Any residue or waste shall be removed from the premises immediately.

After the contents of any can used for collecting garbage has been removed the can shall be immediately washed out with hot water.

All vessels used in transporting garbage from hotels, boarding houses or restaurants to the place of boiling shall be washed out and disinfected as frequently as the Medical Health Officer or Sanitary Inspector may deem necessary.

Any place where hogs are kept and fed on garbage which has been collected in the city of Saskatoon shall be open at any time for inspection by any authorized official of the City Health Department.

ALBERTA

BY T. J. NORMAN, M.D., PROVINCIAL MEDICAL OFFICER OF HEALTH

SECTION 130 of the Health Act reads as follows:—

> No person shall keep any hog within the limits of any city, town, or village without the written permission of the local Board.

This provision does not in practice prevent the keeping of pigs in centres of population, but it does place upon those keeping them the necessity of maintaining their quarters in a sanitary condition. Unless this is done the local Board have the power to withdraw the privilege of keeping hogs. In my opinion health boards in this province are willing to allow the keeping of hogs provided they are kept under sanitary conditions.

BRITISH COLUMBIA

BY H. E. YOUNG, SECRETARY OF THE PROVINCIAL BOARD OF HEALTH

THE sanitary regulations adopted by the Provincial Board of Health provide, by Section 44, that no hog shall be kept, except in pens, and at a distance of at least one hundred feet from any highway house, well, or stream. It shall be lawful for the Local Board, Medical Health Officer, or Provincial Sanitary Inspector, to limit the number of hogs kept in any pen or enclosure, or to increase the isolation distance to five hundred feet, if found necessary, to prevent the said hog-pen or enclosure becoming a nuisance or menace to the public health. The floors of any hog-pen or stable, must be constructed of material impervious to water, kept free of standing pools, liquids, manure or refuse, said manure or refuse must be disposed of in such a way as not to become a nuisance or menace to the public health.

This regulation applies to the province at large with the exception of city municipalities. In the city municipalities by-laws are passed dealing with health matters locally, and these by-laws are subject to the approval of the Board of Health. In the matter of keeping of pigs, the Department has been appealed to, since the suggestions of the Food Controller were made public, in reference to the raising of pigs, and the attitude taken by the Department has been that of leniency and the raising of pigs encouraged, subject to sanitary methods and the approval of local officers.

RECENT AGRICULTURAL LEGISLATION

NEW BRUNSWICK

AT the session of the New Brunswick Legislature which closed on April 26th, a bill was passed repealing the Stallion Act of 1903, amended 1905 and 1916, and substituting another Act varying in some particulars. The differences between the two measures are comprised in Sections 6, 12, and 17, and in sub-sections 2 and 3 of Section 15. Section 6 of the new Act requires all certificates of enrolment to be surrendered on or before the 31st day of December in the calendar year for the purpose of renewal on the payment of an additional fee, the fee required being for first inspection $2, and for each subsequent inspection $1. Section 12 provides that in cases of stallions found on inspection to be unworthy as to breed, type or conformation, the certificate can be withheld. Section 17 states that stallion owners will be notified as to the date and place of inspection, and must have the stallions at the examining point named in the notice at the time and upon the date specified. Failing this, the owner will have to pay all costs incurred for subsequent inspection.

GRADE STALLIONS

Sub-Section 2 of Section 15 permits accredited grade stallions, or cross-breeds, to continue their routes after an accredited pure-bred stallion of a breed approved by the Minister of Agriculture has been available, but the fees charged by the owner of such pure-bred must be satisfactory to the Minister of Agriculture and the fees charged by the grade stallion, or cross-bred, must be identical with those charged for the service of the pure-bred. Failure to comply with this sub-section involves liability for a penalty of not more than $50 or less than $25. Sub-section 3 of the same section provides that a special certificate may be granted to the owner of any stallion in districts which are without stallion service because of the Stallion Act.

ENCOURAGEMENT OF THE SHEEP INDUSTRY

Another Act was adopted by the Legislature which provides for the purchase and sale of sheep. This measure authorizes the Lieutenant-Governor-in-Council, on the recommendation of the Minister of Agriculture, to purchase such a number of sheep for breeding purposes as may be considered necessary, but not to incur an expenditure exceeding $50,000. This money is to be paid out of the revenues of the province and to be returned from the sale of the sheep. The Lieutenant-Governor-in-Council may also guarantee the payment of any advance made to a farmer by any chartered bank within the province up to an amount equal to two-thirds of the selling price of not more than twenty-one sheep. Such sheep are to be resold by the Minister of Agriculture at such times and under such terms and conditions as to their being kept within the province, and otherwise, as may be determined by the Lieutenant-Governor-in-Council.

THE OBJECT AIMED AT

Referring to the sheep bill the Secretary of Agriculture states that it is the intention to make an arrangement with the chartered banks, whereby all orders for breeding sheep will be placed with the local managers. The farmer will pay down one-third when he receives the sheep and will give his note for the balance. The banker is to decide who is worthy of credit. It is not intended that any man shall secure more than twenty-one sheep upon credit under this Act. The $50,000 is to be used as a rolling fund. In this way it is hoped to build up the sheep industry, for which New Brunswick is suited. If several hundred of the best ewe lambs in the Maritime Provinces can be prevented from going to market in the fall, the Secretary feels that something will have been accomplished.

ONE VOTE FOR ONE MAN

The Dairy Act, under which the cheese and butter companies are incorporated, was amended, in order that shareholders would have one vote only, whereas previously it was one vote on every share that was not in default for any call.

APPROPRIATIONS FOR AGRICULTURE

The following is the estimated expenditure on account of Agriculture for 1918, exclusive of funds derived from grants under THE AGRICULTURAL INSTRUCTION ACT of the Dominion:

Grants to societies	$19,000.00
Minister's office, salaries and contingencies	10,916.66
Miscellaneous and insurance	500.00
Butter and cheese factories	5,500.00
Maritime Stock Breeders' Association	200.00
Encouragement of horticulture	1,200.00
Encouragement of stock raising and encouragement of dairying	6,400.00
Bonus to mud dredges for fertilizer	1,700.00
Encouragement to poultry raisers	1,000.00
Standing crop competitions and seed fairs	5,200.00
Brown tail moth and other insects, extermination of	3,300.00
Limerock crusher and power	500.00
Bonus to wheat mills	5,000.00
Exhibitions	2,000.00
Farm Settlement Board	700.00
*Greater production	50,000.00
Provincial Organizer food control	1,800.00
†Purchase of seed	105,000.00
Total	$219,916.66

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* This item includes $25,000 special grant made to the province by the federal Government.

† It is estimated that the proceeds from the sale of seed will reach the same amount.

Included in the estimates for the Department of Education are:

Manual training and household science teachers	$4,300
Manual training and household science equipment	6,000
Consolidated schools	5,000
Total	$15,300

NOVA SCOTIA

BY J. G. ARCHIBALD, B.S.A., DEPARTMENT OF CHEMISTRY

FOUR bills having an important bearing on improved agriculture in our province, have just been passed by the Provincial Legislature.

STALLION ENROLMENT

(1) An Act respecting Stallion enrolment. There have been several Acts prior to this one, all of which are now consolidated and amended into it. The essence of the Act is that all stallions must be enrolled in one of three classes—pure-bred, grade, or scrub. Formerly the scrub was designated by a milder term—cross-bred. Now that such animals have been classified where they really belong, it is hoped that the measure will prove of material assistance in ridding the province of what has been, and is, a serious menace to horse improvement. Clause 14 of the Act, which states that "no charge made for the service of any stallion not enrolled under the provisions of this Act shall be recoverable by any action or proceedings", is worthy of special mention.

SHEEP PROTECTION

(2) An Act to amend the Sheep Protection Act. For many years the two leading features of the Sheep Protection Act have been:

(a) Permission to shoot, under any circumstances any dog caught worrying sheep.

(b) Imposition of a dog tax at the option of municipalities. This was done in only two instances and with good results.

The features of the new Act are:

(a) Compulsory taxation—$1 for every dog, $5 for every unspayed bitch.

(b) An indemnifying fund in all incorporated towns and cities as well as in all municipalities.

AGRICULTURAL SOCIETIES CHANGE OF BREEDS

(3) An Act respecting Change of Breeds of Stock by Agricultural Societies. The principal source of service from pure-bred bulls is through the agricultural societies, of which there are 276 in the province, 12 new ones having been organized this year. The weakest spot heretofore has been the tendency to change breeds. This piece of legislation is designed to guard against such poor policy in future. Clause 3, which gives the Superintendent of Agricultural Societies power to cancel the annual grant of any society following such a practice without his consent and without very valid reasons, is the most important in the Act.

INCREASED PRODUCTION

(4) An Act to Encourage the growing of Wheat and other Cereals. This provides a special appropriation of $25,000, to be used from time to time in giving assistance to the building of cereal mills in parts of the province not now supplied, and in effecting distribution of seed wheat and other grains.

APPROPRIATIONS FOR AGRICULTURE

The estimates for the Department of Agriculture for the current year are allotted as follows:

Agricultural Societies.......	$15,000.00
Agriculture, general.........	38,000.00
Agricultural College and Farm	37,000.00
Total..	$90,000.00

This is an increase of $5000 over the allotment for 1917. Of this increase $3,000 goes to the college and farm and $2,000 to general agriculture.

The following special appropriations have been made:

$25,000 for the encouragement of the growing of wheat and other cereals.

$3,000, with this appropriation a run-out farm situated near the Agricultural College was purchased. This property is to be reserved for working solely with tractor power, and will be used as a basis for securing data from the results of tractor work and the use of artificial fertilizers.

$100,000 for increased production measures. This appropriation was made by an order-in-council. A large part of it will be refunded from the sale of fertilizer and tractors, so that the net expenditure will about equal the grant of $30,000 made to the province by the federal Government.

ALBERTA

THREE Acts of direct agricultural interest were adopted at the recent session of the Alberta Legislature.

MUNICIPAL DISTRICTS SEED GRAIN ACT

The Municipal Districts' Seed Grain Act gives municipalities power to borrow money on the guarantee of the province for the purchase of seed grain to be supplied to resident owners and tenants on patented lands, the loan to the latter not to exceed $300 in value for each quarter section. The interest charged is not to exceed that paid by the municipal district, and the debt is to be secured by a lien on the crop and on the land. If the declaration note is not paid by the 31st December, it rests with the secretary of the municipality to enforce the lien by distress or suit.

THE SEED GRAIN ACT, 1918

The Seed Grain Act, 1918, is almost identical with the Seed Grain Act of 1917, and provides that the Provincial Treasurer, or the Minister of Agriculture, can authorize any person to advance seed grain, or any chartered bank to advance money for the purchase of seed grain, to owners or occupiers of patented lands other than in municipal districts, or to the wives or other representatives of owners who are on active military or naval service, and the Provincial Treasurer or any chartered bank, or individual, advancing seed grain, or money for the purchase of the same, is entitled to take security by promissory note, real estate mortgage, or chattel mortgage. Penalties are provided for persons making use of seed grain, or the money advanced for its purchase, for any other purpose than that for which it was obtained.

THE DAIRYMEN'S ACT

Amendments to the Dairymen's Act give the Minister of Agriculture power to issue licenses to creameries, cream stations, cheese factories, and to testers of milk and cream, in such form and for such a term as may by regulations approved by Order-in-Council be provided. No creamery, cream station, or cheese factory can carry on business after the expiration of a month after the regulations provided have been duly approved and published without such license, the fee for which is $5. No person can operate a cream-testing apparatus after the first day of June, 1918, without securing a license, for which the fee is $2. Before such license is granted, the applicant may be required to pass a satisfactory examination, and to prove by actual demonstration that he is competent and qualified to properly use a cream tester. Any association, corporation, company, person, or firm, engaged in the business of buying milk, cream, or butter fat for the purpose of manufacturing which discriminates in the price paid in different places, except on account of the difference of grade or quality, will be termed guilty of unfair discrimination, and, on conviction, becomes liable to a penalty of not less than $50 or more than $500. It is provided that competition may be met by equal prices without being subject to penalty. The Minister is authorized to make regulations defining grade descriptions and standards of dairy products, and to specify the conditions upon which the Department's butter and cheese grading service may be made available to operators of creameries and cheese factories.

THE FARM MACHINERY ACT

An amendment to the Farm Machinery Act was adopted setting forth that, notwithstanding anything contained in any contract or agreement, there shall be implied in any such contract or agreement for the sale of farm machinery (whether under seal, written or oral), a warranty to the effect that all repair parts in adequate quantities for the said machinery are kept, and will be kept, by the vendor for the period of ten years from the date of said agreement, and may be obtained at the place of business of the agent of the vendor, who is nearest to the purchaser, or at some well advertised point in the province; provided that the keeping of a stock of the necessary repairs as aforesaid on hand at one well advertised place of business in the province for the year 1918, and at two places of business at least 150 miles apart in the province for every year thereafter by the manufacturers or general provincial distributor of said farm machinery, shall be deemed to be a compliance by a vendor within the terms of the contract or agreement as set out in this section.

ALLOTMENTS FOR AGRICULTURE

Following are the allotments for agriculture for the year ending December 31, 1918:

Civil Government	$ 45,480.00
Expenditure under Agriculture Society Ordinance, including grants to Exhibition Associations at Edmonton and Calgary of $5,000 each	105,000.00
To provide for expenses of official judges at agricultural exhibitions	8,500.00
To promote the work of Live Stock and Agricultural Institutes and short course schools	12,000.00
To promote and encourage the production of pure seed grain and provincial seed grain	6,000.00
Administration and operation of Demonstration Farms	66,000.00
Live Stock Encouragement Act	16,000.00
Destruction of Grey or Timber Wolves and Coyotes and Protection of Game	27,000.00
Destruction of noxious weeds	25,000.00
Stock inspection	12,000.00
To provide for expenditure in connection with brands and publication of official Brand Book	12,500.00
Administration of Stallion Act	10,000.00
Collection and compilation of Medical, Agricultural, Industrial and other Statistics	3,500.00
To promote and encourage dairy work	38,594.60
Operation of Schools of Agriculture	20,000.00
Agriculture and Special Statistics	26,810.70
Miscellaneous grants to shows, breeders' associations, etc	17,100.00
Total	$451,485.30

The foregoing are chargeable to income.

The following items are chargeable to capital account:

Purchase and equipment of Demonstration Farms	4,000.00
To assist creameries not exceeding $1,500 to each creamery	4,500.00
To provide for advances under Elevator Act	200,000.00
Total	$208,500.00

PARTIAL ESTIMATES FOR 1919

The following are estimates of expenditure from January 1, 1919, up to the date of final passage of the estimates for the fiscal year ending December 31, 1919.

Agricultural statistics chargeable to income	$170,000.00
Agricultural statistics chargeable to capital account	3,000.00

ESTIMATED REVENUE

The following revenue is expected:

Fees: Game licenses, sale of estray animals and other fees	$27,850.00
Repayment account of seed grain	1,500.00
Repayment loans to creameries	1,000.00
Demonstration Farms	45,000.00
Poultry Breeding Plant	2,000.00
Registration of threshing machines	3,000.00
Brands	25,000.00
Stock inspections	18,000.00
Live Stock Encouragement Act	5,000.00
Enrolment of Stallions	15,000.00
Dominion Government Grant re Greater Production movement	25,000.00
Total	$168,350.00

BRITISH COLUMBIA

AT the recent session of the British Columbia Legislature three measures relating to agriculture were adopted, viz., an amendment to the Pound District Act, an Act respecting Seed-Grain, and an Act for the Protection of Seed. The Pound District Act provides that when an animal impounded cannot be sold, it can be destroyed, and that if the expenses incurred by the pound-keeper are not met by the proceeds of any sale, the deficit shall be paid out of the Consolidated Revenue Fund.

THE SEED-GRAIN ACT

The Act respecting Seed-Grain, to be known as "The Seed-Grain Act," provides that the Minister of Agriculture, may from time to time, purchase and distribute seed grain required, and necessary in his opinion to enable owners or occupiers of land to seed their lands. The amount so expended must not exceed the sum of $50,000 in any one year, and is to be derived from the Consolidated Revenue fund. Applications for seed grain must be made to the Minister, or some appointee of his. Promissory notes are to be given for the seed, and are to be made payable on a date to be fixed by the Minister at a rate of interest not exceeding seven per cent. The Minister can take such proceedings as he thinks proper for the settlement of promissory notes. Persons who do not use all the seed grain for the purpose set forth in their application, and otherwise dispose of it without the consent of the Minister, are subject to a fine of not less than $10 nor more than $250. Any person who has served in the present war in the military or naval forces of His Majesty, or any member of the family of any person who has served, or is serving, in the forces, can be supplied with seed grain on such terms and conditions as the circumstances justify according to the opinion of the Minister without security.

THE SEED PROTECTION ACT

The Act for the Protection of Seed to be known as "The Seed Protection Act," provides for the appointment of a Seed Commissioner and for the appointment of inspectors when considered necessary. A book is required to be kept in the Department of Agriculture to be called the "Register of Seed Crops," wherein is to be entered the location and area, name of variety, strain, etc., of each seed-crop grown, with the names and addresses of the growers. Persons desiring to grow any seed crop must make application to the Seed Commissioner for registration thereof, such application to be in writing, containing all information necessary for registration. Upon receipt of the application, the Seed Commissioner is to submit the same to the Minister with a full report thereon. When the applications are approved permits may be issued for the period of one year and be renewable. No person can grow a seed crop without being in possession of a valid and unexpired permit in a prescribed form. Persons violating the provisions of the Act are subject to a fine not exceeding $100, and in default of payment to imprisonment for a period not exceeding thirty days. Plants of the crops listed not grown for seed purposes, but allowed to grow and flower, are to be treated as noxious weeds as provided in the "Noxious Weeds Act." The seed crop includes mangels, beets, sugar-beets, spinach, chard, swedes, turnips, radishes, kohlrabi, kale, rape, cabbage, cauliflowers, broccoli, carrots, parsnips, celery, parsley, onions, leeks, and corn. No prosecution or destruction of plants or seed crops can take place without the written consent of the Minister. Seed production areas can be established by order-in-council.

APPROPRIATIONS FOR AGRICULTURE

The appropriations for agriculture for the year ending March 31, 1919, are as follows:

Minister's office	$9,920.00
General office	39,979.00
Horticultural Branch	41,492.00
Live Stock Branch	38,793.00
Compensation for tubercular cattle	20,000.00
Agricultural associations, etc	15,000.00
Farmers' institutes	10,000.00
Women's institutes	6,000.00
Bee-keepers' association	250.00
Dairymen's association	1,500.00
Entomological societies	250.00
Fruit growers' association	3,000.00
Goat breeders' association	500.00
Poultry association	1 500.00
Stock breeders' association	1,500.00
Flockmasters' association	500.00
Seed growers' association	1,000.00
Operation of Frondeg Farm	25,000.00
Collection of agricultural statistics	1,500.00
Board of horticulture	500.00
Department exhibits	500.00
Grants to British Columbia students	1,000.00
Total	$219,684.00

PRIZES AT FAIRS FOR NON-PRODUCTIVE LIVE STOCK

NOVA SCOTIA

BY F. L. FULLER, SUPERINTENDENT OF AGRICULTURAL SOCIETIES AND EXHIBITIONS

IN this province the offering of prizes for non-productive live stock at exhibitions is practically non-existent. As our provincial exhibition buildings were destroyed by the accident at Halifax, there will be no provincial show held in the province this year.

The chief educational feature of the local fairs is the school exhibits. At many of our fairs, exhibits prepared by the Agricultural College are displayed, showing the advantages of using improved seed, proper methods of cultivation, and of spraying, etc.

QUEBEC

THE managements of all the large exhibitions in the province of Quebec are arranging this year to encourage the actual farmers, more than amateurs, by offering higher prizes for the useful classes of production and general utility, and the "midways," if they are not entirely suppressed, will be considerably diminished, in accordance with the desire of the Department of Agriculture.

ONTARIO

BY J. LOCKIE WILSON, SUPERINTENDENT OF AGRICULTURAL SOCIETIES

In looking over the prize list of the different agricultural societies there are very few non-productive classes of live stock that receive prizes. The majority of societies confine themselves in the poultry classes to the utility breeds.

SASKATCHEWAN

BY S. E. GREENWAY, DIRECTOR EXTENSION DEPARTMENT

THE larger exhibitions in Saskatchewan this year are eliminating to the fullest extent the non-productive classes of live stock. This matter, which has often been up for discussion, has never had the convincing evidence which is furnished in times like these of the wastefulness of the non-producer. The smaller societies have never made their exhibitions a clearing-house for this kind of stock. The man who is usually among the exhibitors at the smaller fairs did not need to be shown. There never has been enough money offered to tempt him to keep the stuff around him. This is true of all kinds of live stock and poultry. In the matter of poultry, the poultry shows have been gradually cutting off the purely fancy breeds for years.

In the matter of the general educational aspect of the exhibition, I am still convinced that the policy pursued in this province for the last eight or ten years is sound. Some latitude has been allowed fair managements, except in the matter of games of chance or other shows tainted with immorality. These have always been disallowed. Apart from that, what the public ask for, and pay for, they should in a measure be given. This takes into account all kinds of standards, and there are many, and some exceedingly low. I have always urged the directors of the agricultural societies to keep their activities a little above the standard asked for by the public, adding from time to time new educational features, and eliminating the ones that pander solely to the sporting instinct. I have tried, and have succeeded in a measure that has been gratifying to me, to keep the idea before them that exhibitions must in time represent the highest manifestation of rural civilization, that eventually every citizen will recognize in it an opportunity to show what he is contributing to the highest welfare of his community, and this for no prize or reward other than the pleasure which comes with the consciousness that he is making a real contribution to the welfare of his fellows.

ALBERTA

THE prize list committee of the Calgary Industrial Exhibition at a recent meeting authorized the following changes in the prize list for the 1918 exhibition

(1) That dry-mares be eliminated from the pure bred class, except in sections for heavy draughts, roadsters, carriage horses, or saddle horses.

(2) That in the beef breeds of the cattle the only sections provided for females shall be cows, three years or over, with calf by side or under one year if the calf is weaned it must be registered and the cow only judged.

(3) In the herd class for beef breeds the cow three years or over must have been shown in the individual class for a cow three years or over with calf by side.

(4) The prizes in each class of cattle will be uniform for aged animals and young stock alike. Five prizes are offered for each individual class, and four prizes for each herd or progeny class.

(5) Ewe, two shears or over, to be eligible to compete, must have with her a lamb of calendar year. Any aged ewe which cannot show under this classification can be shown for fat ewe or wether.

Last year the poultry lists were considerably reduced by the cutting out of many of the fancy breeds. The poultry prize list has not yet been considered in detail, but it is expected that still further reduction will be made by which the exhibition classes will be practically limited to the utility breeds.

BRITISH COLUMBIA

BY WM. E. SCOTT, DEPUTY MINISTER OF AGRICULTURE

EVERY effort will be made, through agricultural associations holding fairs, to feature the productive classes, and to cut out prizes for non-producing classes such as fancy breeds of poultry. I cannot give you any definite information as to what will be done by the various fairs, but the general tendency will be to offer prizes for the classes which will, to the largest extent possible, encourage the production of these lines of stock and general farm crops. Educational work will be featured at as many of our fairs as possible by means of exhibits from this Department, and also by means of similar exhibits staged by the provincial university and the Dominion experimental farms. The general slogan in all our fairs will be "Contribute towards victory by increasing production."

AGRICULTURAL COLLEGE CLUBS

ONTARIO

BY S. H. GANDIER, SECRETARY AND REGISTRAR

THERE have been organized at the Ontario Agricultural College by the student body, clubs devoted to the study of special branches of work. These include the Cosmopolitan club, the Live Stock club, the Apiculture club, the Horticulture club, the Poultry club, and the Biology club.

The Cosmopolitan club has for its object a better understanding of the political, economic, and literary problems of the different countries, and the cultivation of social intercourse among the students at the college. It holds entertainments for its members.

The Live Stock club was formed in December, 1917. Its objects are to help its members to become better acquainted with the science and principles of live stock breeding and raising; to keep members in touch with all Government work in the development and aid of the live stock industry; to gain a comprehensive knowledge of the leading breeds of live stock, both by judging and lecture work, and to uphold the importance of the live stock industry in its relation to other branches of agriculture. The club is holding a special series of meetings to be addressed by the leading men of the live stock industry.

The Apiculture club was formed in 1910. Its principal work is to give students specially interested in bee-keeping an opportunity to study the science of bee-keeping more thoroughly than is possible in the regular course of lectures. Specialist bee-keepers are called upon to address the club at its meetings.

The Horticulture club was started in 1908. It discusses both practical and scientific problems of vegetable and fruit growing. The special object is to help those taking the horticultural option, to arouse the interest of others, and generally promote horticulture within the college. Competitions in fruit and vegetable judging are held. Lectures are secured from prominent horticulturists engaged in experimental and commercial horticulture.

The Poultry club, organized in 1908, aims to supplement the poultry course as provided by the college curriculum. It encourages its members to regard poultry keeping as a business, to increase the circulation of the best poultry literature, including magazines. The club conducts practical judging classes among the students, thereby enabling them to get a more thorough knowledge of the different breeds, and to distinguish vigour and utility characteristics in birds. Poultry men of outstanding reputation are called upon to address the club. A practical demonstration in egg candling was held in February this year, when each member of the club had the opportunity of candling eggs from incubators on both the 9th and 14th day of hatching, as well as candling and dividing fresh eggs into the different grades of the market classification.

The Biology club differs from the others in not being so highly organized, inasmuch as it has neither president, secretary, nor other officers; not does it collect membership fees. The members meet about twice a month, usually at the home of a member of the faculty, where a paper is read by some member of the club who has full charge of the meeting for that occasion. The aim of the club is to promote an interest in biological topics which may not be discussed in the regular way in the class room. The life and works of some of the great biologists have formed the principal basis of study during the present college year.

MANITOBA

BY V. W. JACKSON, PROFESSOR OF BOTANY AND BIOLOGY

I believe the only club that has been formed at the Manitoba Agricultural College is the "Naturalists' Club." This was formed in 1913, and ran for three years, breaking up when most of the officers and members had gone overseas. At that time the president was Mr. H. E. Hallwright and the secretary, Mr. D. A. Brown, Deloraine.

No doubt this club will be reformed on return to normal conditions as much interest was taken in it at the time. The object of the Naturalists' Club was the dicussion of bird migrations, bird arrivals, and nature study in general, each of the members being expected to report the results of his summer's observations and to give papers on biological topics.

GARDEN, FIELD CROP, AND ORCHARD COMPETITIONS

ONTARIO

THE Ontario Vegetable Growers' Association is this year conducting two competitions, one for gardens, and the other for field crops. The regulations for the garden competition state that each garden must contain not less than three acres and that they will be judged twice during the season, the first judging not later than July 10th, and the second judging not later than August 10th. An entry fee of $1 will be charged. There will be five prizes running from $30 down. Judges will be supplied free of charge by the provincial Department of Agriculture.

The field crop competitions will be conducted in onions, celery, tomatoes, cabbage, early potatoes, and musk melons. The cabbage and potatoes will be judged not later than July 10th, and the celery, melons, onions, and tomatoes about August 10th.

The province for both competitions will be divided into four districts as follows:—

1. Ottawa, Kingston, Belleville.
2. Toronto, Welland, Clinton and Louth.
3. London, St. Thomas, Stratford, Brantford.
4. Blackwell, Sarnia, Tecumseh, Sarnia Independent.

The plots entered for the field crop competition must consist of not less than one-quarter of an acre; there must be ten entries in each class of vegetables named from each district; members can compete in any, or all, of the six crops mentioned; the entrance fee is $1 for each crop; judges will be supplied by the Provincial Department of Agriculture; the prizes, six in number, range from $20 down; special prizes will be offered at the Toronto, Ottawa, Kingston, and London fairs open to prize winners in the different districts. Express charges on these exhibits will be paid by the provincial Government. Only vegetables from the plot entered in the competition can contend for the special prizes at the fairs mentioned.

BRITISH COLUMBIA

THE Horticultural Branch of the Provincial Department of Agriculture has issued rules and regulations for an Orchard and Truck Competition and also for a City and Farm Garden Competition. The rules and regulations for both competitions provide that all farmers' institutes and other organizations desiring to organize these competitions must notify the Provincial Horticulturist at Victoria. The fields or plots entered for the first-named competition must be clearly defined and there must not be less than 10 *bona fide* entries for each kind of crop from any one organization, and no competitor can compete for prizes offered by more than one organization. At least $30 must be offered in prizes for each kind of crop. The competition is divided into seven classes, one for bearing orchards, another for young orchards, a third for bearing strawberries, a fourth for bearing raspberries, and a fifth, sixth and seventh for tomatoes, onions, and celery.

In the City and Farm Garden Competitions 10 *bona fide* entries are also required in each competition, but extra prizes can be given if this number is exceeded. Gardens may be not less than 1,000 square feet in area. If required, the Department will supply the services of assistant horticulturists. The judges will visit the gardens three times, or as often as possible, during the season. The Department will supply one judge. There must be at least $30 offered in prizes for each competition, and, this amount being offered, in each instance will be supplemented by a grant of $25 from the Department. The score card calls for 20 points for quantity and value of crop, quality of crop, assortment as to range of season, variety and kind, industry, enterprise, and skill, and cleanness and neatness. The local fall exhibition societies have been requested by the Department to offer special prizes for collections of vegetables grown by competitors.

NOVA SCOTIA

AGRICULTURAL INSTRUCTION ACTIVITIES

BY J. G. ARCHIBALD, B.S.A., DEPARTMENT OF CHEMISTRY

THE Nova Scotia Department of Agriculture has made a determined effort to insure that the necessary supplies for increased production are available in the province this year. In the main it has been regarded as sound policy not to interfere with existing methods of distribution, such as co-operative farmers' associations and the regular trade. Hence with regard to seed the policy has been restricted to a guarantee against loss on unsold surplus to those dealers and associations who made application for supplies of seed grain.

As a result upwards of 30,000 bushels of seed oats and 8,000 bushels of seed wheat have been brought in and distributed. These additional supplies added to those of the regular trade have proved adequate for the country's needs. With fertilizers the question has been somewhat different. It was ascertained early in the year that existing firms were not in a position to bring in all of the necessary supply. Consequently an extra reserve supply of 2,500 to 3,000 tons was purchased, and this has been largely disposed of, mostly to farmers' co-operative associations and to dealers unable to obtain their usual supplies, but who agreed to assist in the distribution of this reserve supply at a moderate profit.

Practically all the supply of bean seed referred to in our last month's résumé, has been disposed of, largely in districts where beans have not been grown before.

A big interest is still maintained in the tractors and all are doing satisfactory work. A machine of the "caterpillar" type, hitherto not shown in the province, was demonstrated at the Agricultural College farm on Thursday, May 2nd. It did good work with both plough and road grader.

The labour question is the one big element which the Department is not in a position to better materially. At this date it is not possible to estimate to just what extent the situation will interfere with the plans for increased production.

SHEEP EXPERT FOR THE PROVINCE

Mr. S. A. Logan, of Amherst, one of the most prominent sheep and cattle breeders in Eastern Canada, at one time farm manager at the N.S. Agricultural College, has been appointed Sheep Expert for the province. Mr. Logan is at present devoting most of his time to the organization of the co-operative wool marketing system in conjunction with the Live Stock Branch of the federal Department of Agriculture at Ottawa. He is also endeavouring to work out a scheme for the conservation of the ewe lambs which heretofore have gone to the butcher; also by meetings and like measures to stimulate this industry for which Nova Scotia is so well adapted.

ONTARIO

IDLE LAND BEING PUT TO WORK

BY C. F. BAILEY, B.S.A., ASSISTANT DEPUTY MINISTER OF AGRICULTURE

FOR some months past there has been considerable attention given to the question of cultivating idle land adjacent to towns and cities throughout the province. A number of agriculturists met in Toronto some time ago to study this question, and the committee reported favourably on the idea of cultivating large tracts of land in the West, but were unanimous in the opinion that land adjacent to Toronto and Montreal could not be cultivated except at a considerable loss. However, in view of the feed shortage and the urgent call from England for flax fibre and flax seed, the Ontario Government has taken over 100 acres of land near the city of Toronto to be devoted to flax and sown to fall wheat, when the flax is harvested. Three tractors, two pair of horses, and all necessary implements have been purchased, and the work is progressing satisfactorily. Accurate account of all costs is being kept of this undertaking, and, if it proves to be at all feasible to cultivate land in this way, a much larger area will probably be taken over another year.

AGRICULTURAL REPRESENTATIVE NOTES

The county Board of Agriculture of Brant county has offered $15 as prizes to junior farmers in that county for next year's stock-judging team. The prizes will be granted on condition that the boys come within the first five in the judging at the Ontario winter fair.

Mr. R. A. Finn, Agricultural Representative for Middlesex county, reports that the Holstein club organized by him a year ago has held its first sale of fifty head of registered cattle. While few of the cows held official records, the fifty head averaged about $200 each.

The Agricultural Representatives of Ontario are using motion picture films in connection with their work. At a meeting of the Napanee Poultry Association, live birds consisting of White Wyandottes and Barred Rocks, were judged, and then Mr. Curran, the Agricultural Representative, displayed three reels of poultry films showing incubating, rearing, and killing chickens.

The farmers' club movement is developing rapidly in the province. In many of the counties the Agricultural Representatives find it comparatively easy to organize these institutions. Mr. N. C. McKay, of Bruce county, reports having organized three clubs within one week in the month of April. Several of the clubs in that county, he reports, have co-operated in shipping cattle and hogs to market.

As an evidence of the useful character of the Agricultural Representatives' office, Mr. A. P. McVannel, Representative in Prince Edward county, furnishes a list of matters on which he was consulted within one week, as follows: Spraying materials and outfits; poultry diseases and their treatment; purchasing of feed and seed grain; the submitting of samples of wheat and beans for exchange and for tests; the procuring of eggs for school fair purposes; cattle vaccine; the growing of Soja beans for green food; dairy records; lime as a fertilizer; tractor operation; the securing of farm help, and other matters.

The Farmers' Co-operative Association in Lennox and Addington county has, through the Agricultural Representative, placed a minimum order of twelve tons of binder twine. This order, it is expected, will save the farmers about $500 in the cost of the twine.

To encourage junior farmers in Wentworth county, who are taking part in the Acre Profit Competition, two business men are granting money prizes each for the best bushel of wheat grown by a member of the junior farmers' organization in his respective district.

The County Council in the Rainy River District, in order to assist in increasing hog production, has offered to furnish wire fencing to farmers who desire to try the pasturing of hogs this year. The Council is also ready to furnish money to farmers who need help to purchase concentrated hog feed.

It is estimated by Mr. R. H. Clemens, Agricultural Representative for Wellington county, that, as a result of the hog production campaign about 5,000 extra brood sows will be kept in Wellington county this year. Mr. Clemens further estimates that if these sows produce two litters of seven pigs each, and the pigs are kept until they weigh 200 pounds, 7,000 tons, or half a ship load, of extra pork will be provided in this county alone, within a year.

With the idea to secure a supply of young pigs for the boys and girls in the district of Kenora, nineteen brood sows, the mothers of the prospective pigs, have been purchased and placed with the farmers of the district. The agricultural society has offered $50 in prizes for pigs that will be exhibited by children at the annual exhibition to be held in August.

The school garden should be first placed in the school grounds and then at the homes of the school children. A school garden that does not surely increase the home gardens is not worth a moment's consideration. Better home gardening should follow school gardening, in the same way that better accountancy in the counting house follows arithmetic in the class room. There should be a school garden at every school house in the land, however small that garden may be. It may be a green house on the roof, it may be a lawn in the front of the school, or it may be a vegetable plot beside the school. The work that is not good enough for teacher to do is not good enough for pupil to do. To plant a garden at school and not properly take care of it may justly be termed an educational tragedy.—*Out Door Education, April.*

SASKATCHEWAN

OBSERVATIONS ON SWINE FEEDING

BY W. H. J. TISDALE, PROFESSOR OF ANIMAL HUSBANDRY, SASKATCHEWAN UNIVERSITY

VERY few definite figures are as yet available in connection with the swine-feeding experiments carried on thus far at the university, and anything contained in this short summary will be mostly in the way of observation upon these experiments up to date.

For growing pigs the concentrated by-product (shorts) has formed the bulk of the ration used, ranging from one-half to two-thirds mixed with finely ground oats. It has proven highly satisfactory as a bone and tissue builder, particularly when used in conjunction with some good forage crop. It has been found to give best results when mixed half and half with finely ground oats. A small amount of tankage has been used with good results; also a quantity of red-dog flour and a fine oat flour termed Rock River feed. The two latter are not available, however, at the present time.

The shorts mentioned are decreased somewhat as the pigs attain the age of four months, their place in the ration being taken by oats and barley. We are also trying out wheat screenings consisting largely of wild buckwheat and other weed seeds with a fair proportion of cracked and shrunken wheat. This when finely ground is of great value when not fed too heavily and chiefly in the fattening period.

VALUE OF GREEN FEED

Green feed has been used very extensively during the past two seasons with both growing and fattening pigs with excellent results. The cost of 100 lb. gain has been materially lessened by the inclusion of some pasture crop in the ration, and, furthermore, the pigs have also been in a stronger, more thrifty condition when handled in this way. Winter rye sown the previous September has given the earliest green feed in the spring, followed closely by a cereal mixture of peas, oats, and barley, and finishing up with rape. Observations thus far have led to the conclusion that these pasture crops are more suited to the growing stage than the fattening period, though they can be used for both. Pigs confined more closely, and given a heavier grain ration from 5½ to 7 months of age, have been turned on the market more economically than those running continuously on the pasture, and with less grain until 7 months old.

Skim milk and whey have not been used at all in connection with our swine-feeding work, as they are not available. For the young pigs previous to weaning, and for some time after weaning, the shorts and finely ground oats are simply made into a slop form with water.

USE OF THE SELF-FEEDER

The self-feeder is rapidly finding a place, and though it has been tried out for only one season, its worth has been proven over the old method of trough feeding, particularly when used in the paddocks sown to pasture crops. The saving of labour was perhaps the most commendable feature noted, but it was also quite evident that the self-fed pigs gained more rapidly and more economically by consuming a larger daily ration. The pigs handled in this way last year were ready to turn on the market three to four weeks earlier than those fed three times a day in the trough. Further definite data will be obtained this year in connection with this important phase of swine feeding. Observation has also proven quite decidedly that the self-feeder cannot be utilized in feeding brood sows. They fatten too rapidly to give the best results at farrowing time.

Various systems of handling the breeding stock have been tried out with the idea of ascertaining whether or not it is advisable to keep sows after they have raised one or two litters. Many claim that new stock should be purchased each season. This may be true when the sows become so large and clumsy that they kill most of the litter the first two or three days, but the cost of carrying them over from one litter to another cannot very well be made an excuse if economy is practised in their care and feeding.

THE BROOD SOWS

From 20 to 30 brood sows have been carried over in excellent condition on the university farm. After the pigs are weaned, the sows are allowed to roam the summer-fallow, getting all the water they need, but with very little grain. In the fall they have free access to all the stubble fields, where they pick up a good living for five or six weeks from what would otherwise be wasted. About December 1st they are placed in one of these fields permanently for the winter with a straw stack as shelter. Garbage from the university residence is utilized for the winter feeding of these sows, and during the past winter it cut the grain ration by at least one-half. Twenty-five sows ranging in age from 1 to 4 years, and in weight from 300 to 600 lb., receiving garbage every other day, were given an average of 2½ lb. of oat chop per day. They came through in excellent breeding condition and 13 of them have already farrowed with an average of 8 pigs to the litter. It will be seen from this that the cost of carrying these sows for 9 or 10 months does not amount to a great deal. Of course it applies more to pure-bred sows, where a number of the pigs raised are sold for breeding purposes. The same would perhaps not hold good in the case of grade sows where the litter is raised as a straight market proposition.

BRITISH COLUMBIA

CO-OPERATIVE VARIETY TESTS

IN 1917 the Department of Agriculture of British Columbia began a system of the co-operative testing, of varieties of field crops including cereals, potatoes, corn, flax, and sugar beets. So satisfactory were the results of the first year's work that it is being continued. Owing to the scarcity of certain seeds experimenters of last year have been asked by the Department to share their supplies of seed with others who wish to join the movement.

The seed sent out this spring has been confined to potatoes, corn, and flax. The potato seed samples are of fifteen pounds each of three varieties selected from Gold Coin, Carman No. 1, Netted Gem, and Eureka. The corn samples are of one pound each of two varieties, Nothwest Dent and Minnesota No. 13. Both fibre and seed flax are being encouraged. Five pound samples of seed of each are being provided for those desirous of testing this crop.

As in former years, the Department is distributing alfalfa nitro-culture in sufficient quantities to inoculate sixty pounds of seed. A small fee is charged for these samples. Applications for seed reach the Department through the secretaries of Farmers' Institutes.

PART III

Junior Agriculture

DEMONSTRATIONS, COMPETITIONS, AND CLASS-ROOM STUDIES IN RURAL LIFE FOR BOYS AND GIRLS

SUMMER SCHOOLS FOR TEACHERS

NEW BRUNSWICK

THE fifth annual session of the New Brunswick Rural Science schools for teachers will open in the Fisher Vocational school at Woodstock and in the Agricultural School building at Sussex on July 10th, and close on August 7th. Second-year students will be examined on the books required to be read as part of the winter reading and experimental course.

Classes will be found in 1, Physical Nature and Environment; 2, Chemistry of Soil, Plants and Animals; 3, Nature Study of Animals; 4, Plant Study and School Gardening; 5, Method of Instruction with Correlation of Subjects, and the regulations and rules governing this study in the public schools. Trained instructors will be in charge of the several divisions of the course in each school. Specialists in various lines are also expected to give addresses from time to time during the course. Teachers holding provincial licenses who are actually engaging in the public school service of the province are eligible for admission. The usual bonus, twenty dollars, will be paid to every teacher whose work at the school is satisfactory and that during the first school year subsequent to such attendance teaches nature study and agriculture with school gardening in the public schools.

The full course requires attendance for two years. On satisfactory completion of such course a certificate of competency signed by the Minister of Agriculture and Chief Superintendent of Education, will be granted. First year students whose work at the school is satisfactory may undertake instruction in nature study with school gardening in their schools, so as to receive grants. Transportation from homes of students to the school will be paid by the Department, provided receipts for money actually paid for such transportation to the school are handed in to the office of the Director before the close of the session.

QUEBEC

MACDONALD COLLEGE

A SUMMER course in rural sociology will be held at Macdonald College from August 5th to 16th. It is expected that Mr. E. R. Groves, Professor of Rural Sociology of New Hampshire State College, and Dr. Wilson, Professorof Sociology of Cornell University, will assist in this course.

ONTARIO

BY J. B. DANDENO, Ph.D., INSPECTOR OF ELEMENTARY AGRICULTURAL CLASSES

IN 1918 and thereafter all public and separate school inspectors who have rural schools in their inspectorates will be required to take the courses provided at the O.A.C. Guelph, leading to an intermediate certificate in agriculture. These courses are given in two consecutive summer sessions of five weeks each, commencing on July 2nd. Hereafter, no one will be qualified for appointment as inspector who has not an intermediate certificate in agriculture.

The object in requiring inspectors to take these courses is to equip them to inspect intelligently the classes undergoing instruction in agriculture, and the better to understand the farmer's view point and his problems. An inspector is, or should be, a leader in education, and he should be able to inspire both teacher and pupils with a knowledge of, and with a love for, the best things of rural life. Many of the inspectors have been brought up on the farm, but, like most farm boys, saw little more than the drudgery of farm life, and, consequently hastened to leave the farm at the first opportunity. There is more than drudgery in farm life and farm work, and it is expected that the inspectors, through these courses, will secure some of the knowledge and spirit which will enable them to hold their own, and more, even in the discussion of the principles of agriculture with the progressive farmer himself. The boy from such a farm home will naturally look up to the inspector with more sympathetic admiration when he knows that the inspector knows what he knows. And this influence may have, here and there, the effect of creating a liking in the boy's mind for farm life, and may be the deciding factor to inspire the boy to educate himself for the farm.

MANITOBA

BY R. FLETCHER, M.A., DEPUTY MINISTER OF EDUCATION

A COURSE in agriculture will be given at our Agricultural College, opening July 8th and closing August 16th. This is the regular summer course by which teachers are enabled to cover a portion of the work for the B.S.A. degree during vacations.

Teachers holding first class or second class professional certificates may complete certain work in three summer courses, after which they will be admitted to the fourth year in the B.S.A. course. They will thus be able to complete their degree work in two winter sessions. We hope to meet the demand for teachers of agriculture in our schools by this plan. We cannot take raw graduates from an agricultural college and certificate them without normal training, as the training in the method of teaching is as essential to success in this as in any other lines of work taught in the schools.

We have a similar course covering three summers of six weeks each at the agricultural college for women with first class or second class professional standing. This course enables them to qualify as teachers of domestic science in the elementary schools. Credit is given for the work covered in this course in the regular course leading to the degree of Bachelor of Home Economics.

A third course opened on May 20th and runs four weeks. This course is open to the students from the provincial normal school, and any other teachers who wish to get instruction in elementary science, school gardening, woodwork, household science, household art, live stock, and field crops.

A fourth course commences July 22nd, and also runs for four weeks. This course is open to the second normal class.

A fifth course is known as the Rural Ministers' Short Course, and opens July 30th. The subjects taken up will be: rural church problems, the community club movement, production.

COURSE IN TECHNICAL EDUCATION

In addition to the courses given at the Manitoba Agricultural College, the Department of Education conducts a summer school for teachers at the Kelvin Technical High School, Winnipeg. The course occupies from July 2nd to August 3rd, and includes classes in blacksmithing, clay modelling and pottery, drawing, basketry, household arts, printing, wood carving, physical instruction, and other subjects. This course is open to all teachers in the province.

Progress certificates are issued yearly. The certificate of the first year entitles the student to the grant offered by the Department on the recommendation of the inspector of the district in which the student is employed. The complete three years' course qualifies the successful students who hold second class professional standing as instructor of the subject mastered.

SASKATCHEWAN

BY F. W. BATES, DIRECTOR OF SCHOOL AGRICULTURE

THERE is little change in our summer school arrangements from those of previous years excepting that all formal agriculture is taken in one summer. One session is being devoted to nature study, another to school gardening and a third to elementary science with an introduction to agriculture, any two of which prepare for the special diploma issued by the Department of Education. Our summer school is conducted as a regular part of the university work. It consists of a six weeks' course, beginning with July 1st. The first session of the summer school was held at the University of Saskatchewan in 1914. For three years the Department of Education assumed responsibility for its direction and support. Last year at the request of the Department, the University took over the management of the school, the Department continuing its support of the courses for teachers. Last year also for the first time the University offered classes leading to a degree. The courses for teachers are intended to stimulate instruction in agriculture, household science, nature study, art and elementary science in the schools of the province. Students who pass the senior matriculation may in three summer and two winter sessions complete the work required for the B.A. or B.Sc. degree. Arrangements are made regarding railway fares and residence of students. Classes are going on all the time for the benefit of returned soldiers who are continually coming and going. They are given courses specially in agricultural engineering and agriculture.

ALBERTA

THE sixth summer school for teachers will be held at the University of Alberta in Edmonton, from July 2nd to August 3rd. During the previous five summers a total of 1,160 teachers completed courses at these schools. During the past three years, the attendance each year has been over 300. Up to the present, 562 teachers have completed one or more courses in agriculture, 389 one or more courses in nature study, 209 in household science, and 97 in household management. Admission to the summer school is granted to those who hold at least a second class interim certificate, and upon whose work the inspector has given a favourable report. The Department of Education pays the railway fare to and from Edmonton for those teachers attending from points within the province. If students double up, board and room cost $30 a piece for the session. In the case of a student who desires to have a separate room the charge is $35. The courses for high-school teachers will begin at the same time as the other courses, and will continue for the five weeks of the session, but with a special line of agricultural studies. In former years a course was held for teachers from Great Britain and the United States in January and February. This year the course will be given at the same time as the summer school for Canadian teachers.

SPECIAL COURSE FOR INSPECTORS

In the summer of 1914, a special course was provided at the summer school for teachers for the school inspectors of the province. Owing to assignment to other duties a number were then unable to attend. In order to give those who did not take the special course in 1914, as well as any new inspectors who have been appointed, an opportunity to get in touch with the organization of the summer school, and the instruction being given by the teachers in attendance, the Minister of Education has directed that a special course be organized for them this year. The work of the inspectors will be under the immediate leadership of the Director of the summer school. A special feature of the course will be the consideration of problems relating to the inspection and supervision of schools.

BRITISH COLUMBIA

OWING to the serious economic conditions which exist in the provinc of British Columbia, and also with a view to leaving all teachers entirely free to engage in agricultural work during the coming summer, it has been decided by the educational authorities to forego the summer school for teachers for this year. The teachers of the province are being advised of the great need of all possible assistance being given in connection with agricultural and horticultural work and they are urged to do everything they possibly can to help along the work of increased production.

RECEPTACLES FOR SCHOOL FAIR EXHIBITS

The school fair having become an established fact in every province, the time has now come to consider in what manner the interest can be best maintained and the attractiveness increased. The school fair must progress, or take on that commonplace character which leads to decay. The fairs, which being under the direction of the Agricultural Representatives, are in large measure supported by funds derived from grants made under THE AGRICULTURAL INSTRUCTION ACT of the Dominion, have beyond cavil established their value, first, as an educational factor, and secondly, as an inspiration to a desirable spirit of emulation But the material is not all that must be striven for in the training of the young. The more a love for pleasing arrangement and method is fostered and encouraged in our boys and girls, the broader and higher minded will be their outlook upon life. With these thoughts in mind, and with a view to helping in their realization, the following articles from different points in the country have been brought together:

NOVA SCOTIA

BY L. A. DeWOLFE, B.A., DIRECTOR RURAL SCIENCE SCHOOLS

PAPER plates are the only receptacles we supply for children's exhibits of vegetables. Vegetables too large for plates are laid directly on the paper-covered tables.

Our prize list calls for only half-dozens each of potatoes, carrots, parsnips, etc. Plates accommodate these very well. Small beets go on plates. As we call for only four beets, if they are large we stack them—three on the bottom and one on top. Pumpkins, squash, etc., lie singly on the table. Grain in the sheaf is hung on the wall.

We try to borrow show-cases in which to exhibit home-cooking. We have seen cooking protected from thieves by chicken-wire; but that does not protect it from dust. We do not yet provide receptacles for poultry, though it would be well if we could do so. You see, therefore, that we supply no equipment except paper plates.

QUEBEC

BY J. EGBERT McOUAT, B.S.A., DEMONSTRATOR TO RURAL SCHOOLS

IT would appear that the practice of providing receptacles for school fair exhibits should vary very much with the circumstances under which the fair is held. If the demonstrator, or other official, in charge has only one or two fairs for which he is responsible, he can naturally put more time and thought upon preparation for holding them than if he is burdened with a series of fairs held one after the other.

In the latter case it is almost impossible to arrange to carry a great deal of equipment from place to place, especially when the circuit takes in large fairs. Under circumstances where a demonstrator has only a few fairs to hold, the outlay for a complete supply of receptacles is almost too great to be justifiable.

This difficulty could, of course, be partially overcome by co-operation among those holding fairs, but as all the school fairs are held within a very limited time, it is hard to arrange to keep dates far enough apart to arrange for a transfer of such equipment from district to district.

It has not been our practice, nor that of the four provincial demonstrators with whom we co-operate, to provide receptacles to any large extent for school fair exhibits. Some of the reasons for this policy have already been mentioned. We are, perhaps, fortunate in being able to secure, as a rule, a suitable building and also a good supply of tables on which to place the exhibits.

TABLES AND PLATES

We try to have these tables covered with good clean paper, and in most cases the exhibits are placed on them directly without using any receptacle except when it is absolutely necessary. Paper plates are used for exhibits of tomatoes. This is the only receptacle which is regularly provided. The pecks of potatoes are placed in neat piles on the tables or stands, and the entry ticket placed on top. All the potatoes are thus in full view, judging can be more easily done, and the exhibit is uniform in appearance.

No receptacles are needed of course for sheaves of grain or corn. These are either stood along the wall or else laid on the tables. Pupils exhibiting threshed grains provide their own receptacles—generally a glass jar or small bag. More uniformity in the particular class is needed, but it is hard to decide upon a receptacle which every exhibitor may be able to provide. Ears of corn are also laid neatly in rows and each particular section kept in one place.

POULTRY AND COOPS

In the case of poultry the coops or boxes are provided by the children. In order to produce uniformity in the size and shape of the crates, directions are issued by the Poultry Department, Macdonald College, telling each pupil who received eggs how to make a suitable box in which to show their birds. Although these directions are not always closely followed, they have produced a great improvement in the appearance of the poultry exhibits at all fairs.

Children exhibiting flowers are expected to provide their own receptacles. Although some exhibitors are quite careless and bring salmon cans, or other unattractive containers, the majority bring vases of a suitable character.

Exhibits of cooking, such as cake or bread are removed from the pans, placed directly on the tables and then covered with netting. Canned fruit and vegetables are shown in standard jars.

The provision of receptacles, where needed, is left almost altogether to the child. This course is followed chiefly because of circumstances already outlined. The extensive use of receptacles may be advantageous under certain conditions, but so far as our work is concerned we have not yet seen our way clear to adopt this policy.

SOME STATISTICS

The number of children who are taking part in the school fair work this year shows an increase of over 50 percent. Last year seeds and eggs were distributed to 4,893 children. This year the figures total approximately 7,750, an increase of 2,857 in the number of pupils taking care of material. The following list gives an idea of the amounts of different materials being used by the boys and girls taking part in this work:—

Eggs	891 settings
Barley	157 lots
Grain corn	413 "
Oats	307 "
Swedes	495 "
Wheat	471 "
Beans	796 "
Beets	280 "
Flowers	1141 "
Potatoes	1388 "
Sweet corn	819 "
Tomatoes	593 "

Some time ago we predicted that new fairs would be held at several centres, and this prediction has been realized in every instance except one. New English fairs will be held at Bury, Aylmer, Waterloo, Ayer's Cliff and Quyon, and there will be new French fairs at Beauharnois, St. Chrysostome, Compton Village and Lake Megantic. This means that thirty co-operative fairs will be held this year as compared with twenty-one last season.

In districts where new fairs have been arranged by the demonstrators the school boards have loyally supported the movement by making grants towards the funds of the fair.

ONTARIO

BY R. S. DUNCAN, B.S.A., AGRICULTURAL REPRESENTATIVE SUPERVISOR

WITHOUT question there is room for advancement in the matter of arranging and displaying exhibits at rural school fairs. To what extent it is practicable to provide receptacles for such exhibits is a matter upon which there may be a great diversity of opinion. In many districts efforts have been put forth to induce the pupils to show the products from their plots in some uniform receptacle, and to have the teachers and school fair directors arrange them in the tent or building in an attractive and tasteful manner. Unfortunately, however, little thought is given to this feature of display, which is pleasing to the eye, and exhibits are shown in a heterogeneous lot of containers, such as old grain bags, cotton sacks, bran sacks, soap boxes, baskets, gallon measures, and boxes of all sizes and shapes. The writer remembers distinctly attending a school fair where exhibits were displayed in uniform receptacles, and pride was evidently taken in the matter of arrangement. Flowers, girls' sewing and baking, art, collections of nature objects were artistically arranged; potatoes were shown in baskets decorated with tissue paper, grain was displayed in glass quart jars, sheaves of grain were tied neatly with red and blue ribbon, and other exhibits were arranged and displayed in good taste. This naturally left a good impression and indicated pride in having things shown to good advantage.

I would consider it practicable to provide good tables, which should be covered with white paper and the sides draped with white cheesecloth or cotton. Paper or wooden plates should be provided for displays of fruit such as apples, pears, and plums, and for baking such as biscuits and cookies.

Until a few years ago poultry was brought to the fair and exhibited in almost every size and style of coop imaginable. In a great many cases the birds were cramped, and it was not only difficult for the judge to make his awards, but from an educational standpoint those interested could not see the chickens to advantage. Instructions were given to the pupils to make a certain size and style of chicken coop, but, unfortunately, they did not follow such directions in making their coops, and it was indeed difficult to get a proper look at the pullets and cockerels raised by the boys and girls. Individual wire poultry or exhibition coops might be supplied to a very great advantage. These are not costly and can be obtained at almost any poultry supply house. The chickens may then be brought to the fair in any box or coop and transferred to the wire exhibition coops, where one has an excellent opportunity of comparing the different birds on exhibition.

As to the receptacles recommended,

permit me to suggest that potatoes might be displayed in baskets of a uniform size and style of box large enough to hold a peck. Where a dozen potatoes are shown a small pan of a certain size might prove the best receptacle. Bags are objectionable, not only from the judges', but from the onlookers' standpoint. Grains, such as oats, barley, and wheat, also peas and beans, might be exhibited in glass quart jars, which give one an excellent opportunity of seeing the quality of seed, in gallon measures or in cotton bags of a uniform size. It would be very desirable to have all pupils use one or other of these containers in order to have some uniformity.

Roots such as mangels and turnips are usually displayed to advantage on the floor, or if space permits on the tables provided for such purposes. Corn should be husked and braided in order that none of the ears of one exhibit might be mislaid. The vegetables such as beets, carrots, onions and parsnips may be shown to best advantage by having them displayed on the table, each entry by itself. Paper and wooden plates are recommended for fruit and cooking. In most instances, however, cakes and pies are shown on china or pie plates brought from the exhibitor's home.

As for poultry, nothing can surpass the wire exhibition coop. These coops are collapsible and easily handled.

It should be borne in mind that a certain space in the tent, or building, should be reserved for each section on the prize list, and all exhibits of one section or class should be put together. This not only makes it easier for the judges when making their decisions, but it is advisable from the spectator's standpoint, in that they are able to compare one exhibit with another.

The Ontario Department of Agriculture furnishes each Agricultural Representative with 50 collapsible exhibition poultry coops, which are taken around to the school fair as part of the regular equipment. In addition to these coops, wooden or paper plates are the only other receptacles provided.

BY M. H. WINTER, B.S.A., AGRICULTURAL REPRESENTATIVE, RENFREW COUNTY

LAST fall at my school fairs I used paper plates for eggs, apples, cooked articles, etc. For grain we used tin dishes holding about two quarts. The tables for the potatoes were marked off with inch square slats, which keep each lot in its own particular space. Roots, grain in sheaf, etc., are just shown on level tables.

Each representative is left to arrange these exhibits as best suits him. I believe, however, most of the boys just show their exhibits on the tables in receptacles brought by the children. I find that using pie-plates and the small tin dishes make the exhibit much more uniform, and more easily dealt with by the judges.

BY G. R. GREEN, B.S.A., AGRICULTURAL REPRESENTATIVE, OXFORD

REGARDING receptacles for school fair exhibits, I might say that our plan is practically the same as that used in other parts of Ontario for this work, as far as we are aware.

The chicken coops in use are steel wire, collapsible, one-piece units, and are very suitable and convenient for this work.

For displaying other exhibits, we use fourteen one-piece tables, 10 feet long, 2½ feet wide, and about 2½ feet high. These are placed around the outside wall, and down the centre of the tent, and are very handy and easily put up, and not too cumbersome when moving. Potatoes are shown on the tables, in either dozen or half dozen lots, in crates which may be folded when not in use, and with spaces large enough to hold only the required number for the exhibit. Other material, such as roots, grain, etc., are exhibited on these tables in whatever receptacles they happen to be in when brought to the fair. Home cooking is also displayed in the same way, being exhibited only on the tables.

As far as I know, there is no definite plan outlined for this work, but, I have reason to believe, that the Representatives in Ontario follow pretty much the same plan.

BY R. A. FINN, B.S.A., AGRICULTURAL REPRESENTATIVE, MIDDLESEX CO.

THE Department of Agriculture, through the Agricultural Representative's office, provides a tent or tents, tables, and wire chicken coops. The tables are 10 feet long and 3 feet wide and 3 feet high. Each county has 50 of these tables. The exhibits, potatoes and other vegetables, etc., are placed directly on the tables in racks made from strips of wood one inch square, placed so as to give space of about one foot square to each exhibit. Two of these racks fit on one table, providing for 30 exhibits. The racks are made so as to fold up for easy transportation. Bunting is tacked around the table, reaching the ground. This adds to the attractiveness of the tent, and hides the baskets and boxes brought by the exhibitors and placed beneath the tables. The wire coops for the chickens have no bottoms, and stand on the ground. These also fold up and are taken from fair to fair.

BY E. K. HAMPSON, B.S.A., AGRICULTURAL REPRESENTATIVE, WELLAND

REGARDING receptacles for school fair exhibits our method of dealing therewith is briefly as follows: A large tent is erected and a number of tables, usually about sixteen, are placed along the sides and in the middle of the tent. The legs of the tables are hinged so that they can be put together fairly well for shipping. The only method of displaying is the placing of exhibits on these tables, after first covering them with paper. The centre tables are used for flowers, fruit, and confectionery, and by using various packing boxes, etc., suitably covered with coloured paper or cheese cloth, we have been able to make the centre attractive. There is, however, a need for better arrangements in this respect, and tables should be made strong enough to withstand the amount of shipping and teaming to which they are subjected. It would be a good idea if a detailed plan were given for the construction of suitable tables. Some of the tables have not legs, but are placed upon supports, and this is not very satisfactory. We lack, particularly, suitable arrangements for displaying drawing, writing and nature study exhibits. Probably a folding screen might be arranged to show these to better advantage.

BY E. P. BRADT, B.S.A., AGRICULTURAL REPRESENTATIVE, DUNDAS

WE have supplied us standard steel coops for the exhibition of poultry at our fairs. These are collapsible and fifty of them make up in a small space for shipment. This coop is very satisfactory for the exhibit of poultry, the fifty can be made up in a few minutes and can be set out on the grass in any corner of the field. The poultry show off to good advantage in these coops.

With regard to our method of exhibiting potatoes, roots, grain, home cooking, manual training, nature study exhibits, etc., I may say that we use tables 12 feet long by 3 feet wide. We put these around the outside of the tent, leaving a space at the doorway for entrance. We also put two rows of tables adjoining each other through the centre of the tent. This gives us a fairly large table space and makes it possible to show to fairly good advantage all the products that are brought in for exhibition. It would be somewhat difficult to arrange any other system that would be readily transportable from one section to another. I have always felt that it would show off the exhibits to much better advantage if some system could be used whereby the exhibits could be placed on a platform built up in the form of steps. This, however, would make a cumbersome equipment to move, and in our school fair work we have to consider these items, as school fairs are frequently held on consecutive days during the week, and it is necessary to move from one fair to another in a short space of time.

We always cover these tables with a cheap grade of felt paper. The exhibits show off to much better advantage where this is done. The Ontario Department authorized the construction of tables of this kind two or three years ago. They work out fairly well, and have the advantage, as I mentioned before, of being easily transported.

MANITOBA

BY S. T. NEWTON, SUPERINTENDENT OF EXTENSION SERVICE

DURING the past two years considerable improvement has been made in the method of exhibiting the various products at both the agricultural society and boys' and girls' club fairs.

Slower progress [was made in the method of exhibiting poultry than in any other class, due mainly to the fact that children were encouraged to exhibit their whole flock, and the standard coops were not large enough. As a consequence, packing boxes, often too shallow, were improvised.

This year an effort is being made to have only two sized exhibit coops

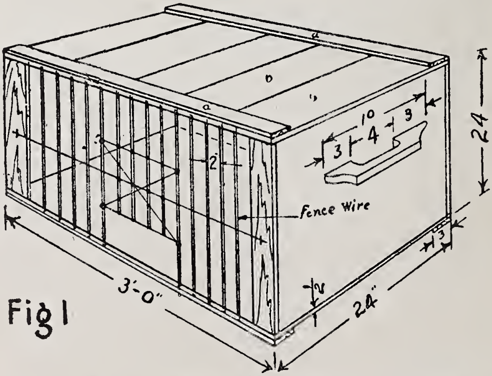


Fig 1

COOPS 24 X 24 X 36 RECOMMENDED FOR SIX BIRDS used, the standard coop 24 x 24 x 24 inches for one, two, or three birds, and a coop 24 x 24 x 36 inches for a pen of six.

Fig. 1 illustrates the larger coop recommended. It is closed in on all sides except the front, and is intended to be made of such material as can be found on the average farm. Ordinary fence wire is used on the front, and the cleats a.a. serve the double purpose of keeping the wires in place and holding together the several pieces out of which the top and bottom are made. A sliding door in the front enables the judge to make a more thorough inspection of the birds. The judge allows 10 per cent. of the number of points for the coop.

In gardening, the number of vegetacles in each class exhibited is limited to one dozen. This permits a couple of picnic plates to be used with a half dozen vegetables on each.

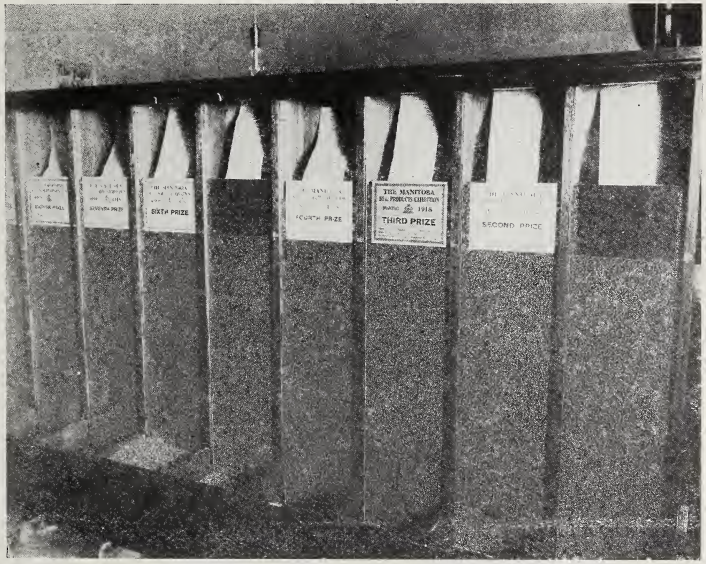


FIG. 2.—ONE SIDE OF SIX GLASS FRONT CABINETS USED BY THE EXTENSION SERVICE IN MANITOBA IN EXHIBITING SEED GRAIN

For potatoes, each contestant secures a shallow box large enough to hold the dozen potatoes in a single layer. The bottom of the box is padded with soft paper, and the lower half of each potato is wrapped in tissue paper.

Now that a large number of the boys are entering the grain growing competitions, it has been found of advantage to give definite instructions to the competitors as to the best methods to follow in planning for a good display. Figures 2 and 3, taken at the recent Soil Products Exhibition, illustrate two different methods. In Fig 2, the cabinet is divided into bins each 2 x 8 x 36 inches, and is a very attractive method of showing any kind of grain. The glass fronts are fitted in grooves so that they may be taken out when it is necessary to remove the grain. A small receptacle at the bottom of the glass permits enough of the same kind of grain to be within reach to satisfy the curiosity of the casual visitor, while the main body of the grain remains unmixed. Each bin holds a half bushel. Figure 3 illustrates a slight improvement on the old method. Each sack holds a little over half a bushel, and as it has a square bottom, a group can be arranged very readily.

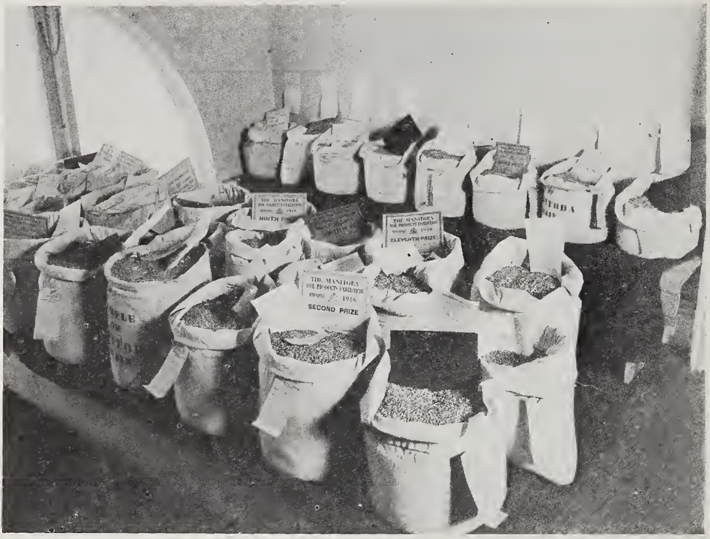

THE MANITOBA SOIL PRODUCTS EXHIBITION 1918 NINTH PRIZE
THE MANITOBA SOIL PRODUCTS EXHIBITION 1918 ELEVENTH PRIZE
THE MANITOBA SOIL PRODUCTS EXHIBITION 1918 SECOND PRIZE

FIG. 3.—SACKS USED BY THE EXTENSION SERVICE, MANITOBA DEPARTMENT OF AGRICULTURE AT THE SOIL PRODUCTS EXHIBITION

In exhibiting bread, cakes, etc., a big effort has been made to have all exhibits under glass. Where this is not possible, mosquito netting is used, and serves at least to keep the flies at a respectable distance.

In exhibiting sewing it has been found of advantage to use standard-sized cardboard mounts 22 x 28 inches. These are laced in pairs, and have the advantage that they fold together like a portfolio, and when opened out fill a space 28 x 45 inches, which is as much as can be viewed satisfactorily on the average wall.

SASKATCHEWAN

BY FRED. W. BATES, M.Sc., DIRECTOR OF SCHOOL AGRICULTURE

WE have made no departmental effort to have receptacles provided for school fair exhibits, as we consider this to be a matter for local enterprise. The only assistance that can be given is good advice, as it is quite out of the range of possibility to provide receptacles for the local fairs, and as we do not give any financial aid to school fairs the matter cannot be regulated through grants.

General observation of the efforts made at the various fairs shows a great variety of method in handling the exhibits. Where only six potatoes and less than six other vegetables are required, the exhibit can be shown satisfactorily on plates. Where large quantities are shown, a shallow box seems best, as it makes the work of the judges much easier, and at the same time displays the exhibit effectively. The use of bags is to be deprecated. Threshed grain show best in glass jars, while poultry should be in crates with woven wire fronts. Cooking can be placed with good effect on plates or in shallow tins.

Two points should always be borne in mind in making an exhibit for school fair purposes, viz., convenience in judging and accessibility. The judging must, as a rule, be done in a minimum of time, and, therefore, every effort should be made to simplify this operation.

One of the chief functions of the school fair is to place before the public the work of the pupils. Everything possible should be done to make the exhibits readily accessible to public inspection, so that the work may be examined without difficulty. When these considerations are definitely before the fair committee, the matter of receptacles will adjust itself without any attempt on the part of the department of Government concerned to standardize this phase of the school fair work.

ALBERTA

BY JAS. McCAIG, M.A., EDITOR OF PUBLICATIONS

IT should be practicable to provide receptacles for the containing of school exhibits.

As potatoes are usually exhibited to the amount of a peck, a shallow box of suitable size should be used.

Other vegetables, as they are shown in number of about three to six, might be displayed on the tables without being contained in any receptacle.

Threshed grain, if not over two quarts, might be exhibited in sauce dishes. It can be better saved in sealers, but is not so well seen.

Standard poultry exhibition crates might be used of sufficient size to meet the number of birds exhibited.

The home cooking should be displayed on suitable tables, and the school work hung up. These receptacles should be made by the pupils of the school, each one according to standard type.

BRITISH COLUMBIA

BY J. W. GIBSON, M.A., DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION

IT has always appeared to me that where school fairs are held in conjunction with agricultural society fairs, the exhibition authorities should provide suitable receptacles for the display of fruits, vegetables, and flowers. There is no doubt that uniform receptacles would greatly improve the appearance of the exhibits. For potatoes and vegetables small wooden measures holding approximately half a bushel would be satisfactory. For samples of grain glass jars are probably best. For exhibits such as home cooking inexpensive delph plates or even paper plates might serve.

We have not yet made any move to supply such receptacles in connection with our school fairs in this province. The onus of supplying suitable receptacles has always been placed on the schools taking part in such fairs, as the awards take into consideration arrangement and general appearance of exhibits. As suitable containers of uniform material or design affect the appearance of the exhibits to quite a degree, it is always in the interests of the competitors that they provide such receptacles.

A MUNICIPAL AGRICULTURAL SCHOOL

NOVA SCOTIA

BY L. A. DeWOLFE, B.A., DIRECTOR RURAL SCIENCE SCHOOLS

MR. Kennedy's municipal agricultural proposition is excellent. Though public opinion is not yet ready for it, these times of change in methods and opinions will make such a school possible. We are in the midst of political, social and religious revolution. How natural, therefore, will be educational revolution.

Public opinion is not our most serious bar to progress. Public opinion can be moulded by strong leaders. Our teachers lack enthusiasm and leadership. The teacher who can assume the proper leadership will sooner or later prove herself worthy of a proper salary. When the proper teacher takes command the salary will adjust itself and the municipal agricultural school will be possible.

ONTARIO

BY J. B. DANDENO, Ph.D. (HARV.), INSPECTOR OF ELEMENTARY AGRICULTURAL CLASSES

TWO articles by Mr. A. Kennedy, Inspector of Schools for Saskatchewan, the one in the January number and the other in the April number of THE GAZETTE, deal with a matter of considerable interest to those concerned with agricultural education, and consequently warrant the setting forth of some comment from a different angle.

If a municipality, or government, had the right to decide for the individual what vocation he should follow and if it concluded that it would be best for the individual, and for the state, to have large numbers of young men adopt the occupation of agriculture or horticulture, or some branch of either, then there might be some justification for the establishment of municipal agricultural high schools. But no government of a democratic people should assume, or would assume, such a position. Theoretically, perhaps, such schools may be all right. The only difficulty—and it is an all important one—is that pupils in sufficient numbers could not be secured. I speak from the view point of the Ontario boy, and from Ontario conditions. In fact that position has been abundantly proven in several of the states, notably Wisconsin, which had eight county agricultural schools and has abandoned practically all of them.

As I have already stated, boys would not be attracted to such a school, the chief reason being that the course in such school does not lead anywhere except back to the farm, or, perhaps, to the agricultural college. It is quite true that a pupil who attended such a school might desire to go back to a farm, but at the age at which a boy usually enters the high school he expects to pursue a course of study that *may* lead him elsewhere than back to the farm, if he desires later on. Moreover, the function of any high school should be to enlarge the vision of the pupil and provide him with a course of study broad enough to open up to him, to some extent, the doors to several vocations. Agriculture should, of course, be one of these. The high school has no right to decide for a boy that he should go back to the farm, but the boy has a right to expect that the high school will give him a course of study which will prepare him for, and give him some knowledge of rural occupations as well as of city occupations. Our high schools have not done this, but they are rapidly developing in this direction in Ontario at the present time.

The schools referred to in Wisconsin were opened up as municipal agricultural schools, but the authorities found that, excepting for short courses, the attendance was very meagre, and various devices were used, but without much success, to attract boys to these schools. The attendance could not be secured, so these schools changed their curriculum in such a way that they are now actually high schools offering the usual courses preparatory to college and university. They still carry on good courses in agriculture with a very much improved attendance. Such schools are now performing an important function in the state, for, as a matter of fact, they are sending more boys back to the farm than they did when they were municipal agricultural schools.

When Mr. Kennedy states: "There is no good reason why two or more types of secondary schools should not flourish side by side," he does not at all represent the situation in Ontario. One high school is all a municipality can support, either with respect to pupils or financially, in all municipalities of Ontario, excepting such cities as Toronto or Hamilton. There is not sufficient population or money in the rural and semi-urban communities. From my knowledge of the conditions, I should

AGRICULTURAL CLASS AT WORK, ROPE SPLICING, NEW LISKEARD CONTINUATION SCHOOL

think that as the population is much more scattered in Saskatchewan, two or more types of secondary schools side by side would be an exceedingly extravagant situation. Most municipalities in Ontario find one high school a sufficient burden.

However, there is no doubt that all high schools will be obliged to modify their courses of study in the near future to meet the needs of the rural communities. The Department of Education in Ontario has made provision for the introduction of agriculture as an optional subject into the secondary schools. Twenty-three such schools have undertaken this work, and so far with pronounced success.

The two supposed objections set up against the municipal agricultural school, and answered by Mr. Kennedy himself, are really no objections at all, at least not in Ontario. He is doubtless correct when he says that the high school system has failed to attract farmer boys who expect to go back to the farm. But where a high school offers a suitable course in agriculture that charge against the high school vanishes. The illustrations here given show something of the work of our agricultural high schools.

The chief objections to a municipal agricultural secondary school as proposed by Mr. Kennedy are not those mentioned by him, but are as follows:—

(1) Abnormal expenditure required to provide, as he says, two or more types of secondary schools side by side.

(2) Impossibility of securing attendance, excepting for short courses.

(3) Unless a boy is possessed of considerable means, such school leads only to the position of a farm hand

TESTING MILK FOR BUTTER FAT WITH BABCOCK TESTER; AGRICULTURAL CLASS AT WORK
THIS CLASS CARRIES ON THE ORDINARY HIGH SCHOOL WORK ALONG WITH AGRICULTURE

This third objection, probably involving also the second, is the most important, and it is unsurmountable. Farming requires considerable capital, consequently, unless a young man is able to buy or rent a farm and provide stock and implements, he sees no way of entering upon this occupation, excepting as a hired man, and this is not a very attractive outlook. It is far otherwise with respect to the industries or commercial enterprises. Ten young men would prefer to enter a factory or commercial office for weekly wages for one who would prefer the occupation of hired man, or farm hand, and, in the main, this latter is what the municipal agricultural school would lead to.

MANITOBA

BY S. E. LANG, INSPECTOR OF HIGH SCHOOLS

MR. KENNEDY'S articles in THE AGRICULTURAL GAZETTE (Vol. V., pp. 82 and 385) on the municipal agricultural school have attracted considerable attention and comment. His idea is to link up the municipal high school with the municipal offices and the agricultural society plant, the educational activities of the school to be directed by an elected board of seven men and women with an appointed secretary-treasurer, whose duties would include that of district organizer and agricultural representative. There is a quarter section of land to be used as a site for practical demonstrations of agriculture, and also to produce revenue for the school. It will provide also a twenty-acre field for athletic and fair grounds. Mr. Kennedy's plan apparently contemplates something of the nature of a part-time boarding school. At any rate, he says that "such a school would be within reach of the homes of the youths so that the parents would not hesitate to send the boys and the girls for a considerable portion of the week," and, further on, the principal is to direct "the reading and study during the evening hours."

DIFFICULTIES TO BE SURMOUNTED

I may mention a few difficulties which will, possibly, have already been carefully considered by Mr. Kennedy.

If the school is to be conducted as a day school it will involve the problem of conveyance of pupils who live at a distance from the school. This would, no doubt, prove an expensive feature. In making up his budget, Mr. Kennedy should put down $45 per annum for each pupil to be transported. It is an open question as to whether the boarding-school idea will fit in with our domestic arrangements and habits in this country. It remains to be seen whether the parents concerned will endorse an educational scheme involving a breach in the family circle for four nights a week. Parents in this country generally cherish a deep-seated prejudice in favour of keeping children of high school age under the parental roof.

REVENUE AND STAFF

How is the quarter section to "provide a very considerable portion of the revenue required for the operation of the school"? The principal of the school is expected to direct the farm work. In this he will have the advice and co-operation of the secretary-manager. They will both have their hands full. The secretary-manager will be extremely busy with boys' and girls' clubs, contests, and fairs, the organization and direction of short courses, the visitation of farms in the district for the purpose of giving advice and assistance, and the work of truant officer as well. Men of the type required are available. They are not numerous, but they can be secured.

THE PRINCIPAL

It would be more difficult to secure a principal of the kind required. Men can be secured who can manage and teach a school with great success. Men can be secured who can operate a real farm at a profit. But the men who combine both of these functions in their individual persons are far from numerous. There is, indeed, much to be said in favour of a rural high school under the direction of a principal provided with a comfortable residence and a few acres of ground for cultivation. It would be a long step toward that permanency of tenure and service which is so greatly to be desired.

It will be necessary to make out a concrete programme of study and work for the rural high school. This is a task which has caused a good deal of heart-searching. I hope Mr. Kennedy will in a future article give us the benefit of his conclusions on this subject. Up to the present time the "consolidated" school has not succeeded in developing a new type of rural education, such as was freely prophesied for it a few years ago. The new rural high school will justify its existence by the character and distinctive quality of the education and training it offers to its patrons.

COMPETITIONS AT SCHOOL AND SUMMER FAIRS

ONTARIO

MR. E. K. HAMPSON, Agricultural Representative for Welland County, Ontario, reports that the principal of the Welland Business College is offering six weeks', four weeks', and two weeks' courses at the business college as first, second, and third prizes to pupils taking part in the school fair, who are in the senior fourth class. The competition will cover the work done in drawing, penmanship, and the writing of essays.

SASKATCHEWAN

WITH a view to stimulating an interest in the different phases of agricultural pursuits among the boys and girls of the Arcola, Saskatchewan, district, the Arcola Agricultural Society, in co-operation with individuals and local banks, are offering special inducements to be competed for at the summer fair. Competitions will include calves raised and shown by boys; boy herdmanship; pairs of pigs raised by boys or girls; milking competition for boys or girls; cattle judging; collections of vegetables; essays on tree culture; school garden and other topics. From three to ten prizes will be awarded in each competition. These run from $14 to $5 for the first prize, and from $2 to $1 for the lowest.

THE FARM BOYS' CAMP

THE Farm Boys' Camp, which has been successfully conducted for the last three years as an outstanding educational feature of the provincial exhibition at Regina, has been planned for this year. The provincial university has the matter in hand, and has arranged for a programme that will include agricultural instruction by way of addresses and judging competitions on live stock, identification competitions of weeds, demonstrations on poultry, and addresses on live stock; special efficiency courses, including practical demonstrations of first aid methods; talks on personal hygiene and kindred subjects and on leadership; organized recreation, consisting of physical drill, organized ball games, singing, etc.; assisting with the live stock parade, and a special course of lectures for the supervisors, including talks on boy leadership. In choosing the teams at the judging competitions societies are asked to select boys who have won prizes in similar competitions. It is proposed, as soon as the entries for the camp are received, to visit all the societies sending teams and to put on a preparatory course for the boys. Boys attending the camp will be required to qualify by excelling in boys' club work or other competitions. An attempt will also be made to enlist the services of boys following attendance at the camp in some junior work in their community which will maintain their interest in the knowledge they have acquired.

ALBERTA

BY J. M. McCAIG, M.A., EDITOR OF PUBLICATIONS

THE Department will continue its school fair work this year on about the same lines as last year. E. S. Hopkins, instructor in science in the Vermilion School of Agriculture, is in charge of the work. Free vegetable and flower seeds and potatoes will be distributed to the schools, and fairs will be held in the fall. Some increase in the number of centres will be necessary this year, but it is not the policy of the Department under present conditions to employ many men in this work. The outside force of the Department is practically all taken up with the sole and definite work of increasing farm production, and it is engaging all of the men who were in school fair work last year. A few fairs that were making a beginning under school auspices will be taken care of by the Department of Agriculture with the school inspectors giving some assistance where required.

NEW BRUNSWICK

WAR GARDENING

THE *Educational Review,* of New Brunswick, in the April number addresses an appeal to teachers from an official of the Department of Education on the subject of "War Gardening":—

"The Allies expect every Canadian teacher to do her duty by having a 'War Garden' at her school. Of course you are going to 'Do Your Bit.'

"Now, how to go about it. That depends on your aim. Up to the present year, we have always considered the school garden a laboratory, where the children planted a bit of this and a little of that in various soils, and at different periods of the season. The work of enemy plotters—cabbage worms, black rust, potato bug—was observed and various fertilizers used. Finally came the gathering of the crops and the school fair, after which the produce was disposed of in various ways. The knowledge gained from experimenting has been the main object striven for, while the actual quantity of vegetables raised has been a minor part of the project.

"In the field of biology, when an organ is no longer needed to perform its special work, it immediately makes use of a function until then more or less undeveloped and takes upon itself a new duty. So it is with our school gardens this year. The garden of 1918 is a 'War Garden.' Its function has changed. Hence, experimentation, once the main aim, is still carried on slightly, but is made subservient to the once least considered but now all essential matter—the actual amount of vegetables grown.

"Our aim, then, is to grow as many vegetables as the children can care for, with as little waste of ground, energy and seeds as possible.

"If you are an experienced gardener, try raising some vegetable new to our diet but considered suitable to the climate. If you are an amateur, keep to the well-known vegetables, or inexperience and over-enthusiasm will mean waste.

"Begin immediately. Do your gardening on paper. Have few paths and have long rows. It saves space and cultivation is easier."

ONTARIO

NIGHT CLASSES IN HOUSEHOLD SCIENCE

BY J. W. STARK, B.S.A., AGRICULTURAL REPRESENTATIVE, PEEL COUNTY

AT the beginning of April, I received a letter from the secretary of the Alton Junior Institute asking me if I could meet a deputation of their institute at a farmers' meeting that I was to address at Alton. On the night of the meeting, I found that they wished to make application for a short course in Domestic Science for January, 1919. This was a long way ahead, and I thought that there was no time like the present in which we should know about foods and have the best instruction in their use and in cooking and canning. After the girls had presented their case for the class to be held in January, I asked them if they thought they could get ready in ten days to begin their class on the 8th of April. This took them by surprise, but they said they would be glad to have it at that time, but did not know that it was possible to have it so soon. The next day I arranged with Mr. G. A. Putnam, Superintendent of Women's Institutes, to have an instructor sent out to begin on the date mentioned.

The junior institute consists of

girls who work in offices and factories, school teachers, and farmers' daughters. They were forced to have night classes, and we arranged for them to meet at 7.30 and conclude at 10. The average attendance at these classes was 31, and the girls gave a general invitation to the members of the senior women's institute. The course of instruction was about the same as the regular two weeks' course of ten lectures in Food Values and Cooking, as given by the regular demonstrators under the Institutes Branch, but I had special attention given to home canning with a view to organizing canning teams later on. The class concluded on April 19th.

There was a little difficulty at first in securing a suitable hall for the demonstration, but one was finally arranged and the girls got the coal-oil stove, tables, and the other necessary equipment from among their own members, and they supplied such materials as milk, butter, fruit, etc., in the same way.

I believe one of the indirect results in this particular case was the securing of a public hall for the village. One of the local men donated an old church for the use of the meetings in the village if the local people would agree to put the building in repair. This was announced on the day the class concluded.

I believe these night classes in Food Values and Cooking and Canning are very useful, and this is a line that could profitably be extended throughout Canada this year. The people in Alton were highly pleased with the whole programme, and I have no doubt much direct benefit in the matter of use of foods will result.

A SCHOOL GARDEN PRODUCTION ENTERPRISE

PRINCIPAL YOUNG, of the Central School in Guelph, Ontario, last year carried out a school garden scheme that was productive of excellent results. The school was asked to take charge of the cultivation of a lot of 1½ acres owned by the Board of Education. On the first of May, the Central Agricultural Society was organized with two teachers and eight pupils as members. Regulations were drawn up providing that all work done must be under the supervision of an officer; that all expenses of cultivation and seed were to be paid for out of the crop; that the proceeds should be divided according to the hours of work done by each, a boy's work to count the same as a man's; that a correct time sheet should be kept of each person's work and entered up for each day; that each member find his own cultivation tools. The club engaged a man to plough, disc, and harrow the plot, all the other work being done by the members of the club. Ten bags of seed potatoes, consisting of four bags of Delaware, two of Green Mountain, and four of White Star, were purchased at $4 a bag. The seed was cut and planted by the members at different dates on one acre of the ground. The remaining one-half acre was planted with twenty pounds of white pea beans. On account of the moist weather in June, the hoeing was difficult and discouraging.

THE PRODUCTS AND PROFIT

Towards the end of June a hoeing match was held, at which prizes were offered for the best hoed rows. Forty boys participated in this competition, and were afterwards treated to ice cream and coffee. The potatoes and beans were hoed from four to five times. Paris green and fungicide were applied as required. The harvesting commenced on the 8th of September and continued until the end of October. Two hundred bags of potatoes were produced and sold at the rate of $1.25 a bag, or 30c a basket, and delivered on the "cash and carry system." The beans were threshed with the old-fashioned flail on evenings and Saturdays. The beans were cleaned through a fanning mill, and twelve bags of crop were secured. Sixteen bushels of the best were sold at $9 a bushel. The potatoes brought $252.40, and the beans $144. The expenses amounted to $74, which left $322.40 to be divided according to the work done, which occupied 1,288 hours.

A small percentage of the boys dropped out during the season. These were paid for the work that they did. The field was ploughed in the autumn to be again cropped this year.

THIS YEAR'S PROGRAMME

The crop this year will include Irish Cobbler potatoes, beans, and Danvers onions. In order to give as many boys as possible a chance to work, plans have been made to take drafts in turn from six of the highest rooms—Jr. IV. to Sr. III. These classes receive elementary lessons in agriculture. The boys will be paid weekly for their work at the rate of 15 cents per hour.

MANITOBA

DEMONSTRATION FIELD, BRANDON NORMAL SCHOOL

BY T. J. HARRISON, B.S.A., PROFESSOR OF FIELD HUSBANDRY, AGRICULTURAL COLLEGE

THE students attending the Winnipeg normal school must spend at least one month in the study of agriculture at the Agricultural College. The students at the Brandon normal school were not able to take part in this special agricultural course. Mr. B. J. Hales, the principal at Brandon, was desirous of having his pupils take up this work, and for the last few years has made arrangements to have the agricultural teachers from the Manitoba Agricultural College give a series of lectures at the normal school.

In connection with the field husbandry and dairy work there was some handicap because of lack of equipment and material. In an endeavour to overcome this the Department of Education has placed in the school a complete dairy equipment, and the Department of Agriculture, Department of Education, and the Agricultural College have co-operated in preparing a ten-acre demonstration field adjacent to the school.

The arrangement has been as follows:—The Department of Education to supply the land; the Department of Agriculture, the cultivation; and the Agricultural College, the seed. The supervision of the field is under the Department of Field Husbandry at the College. The idea of the demonstration field is to demonstrate the more common varieties of grain, and forage crops, so that the students may become familiar with these under field conditions. There is also a number of less common crops, which are frequently foisted upon farmers at ridiculously high prices with considerable loss to the farmers, the idea being to give the teacher an idea of these crops so that she may, in her sphere as leader in her district, prevent this exploitation.

The crops which will be demonstrated are as follows:

CEREALS—

Uncommon types of Wheat—Einkorn, Speltz, Emmer, Club, Alaska, Durum, and Polish.

Common Varieties of Wheat—Red Fife, Marquis, Kitchener, Red Bobs, Prelude, Pioneer, and Minnesota 169.

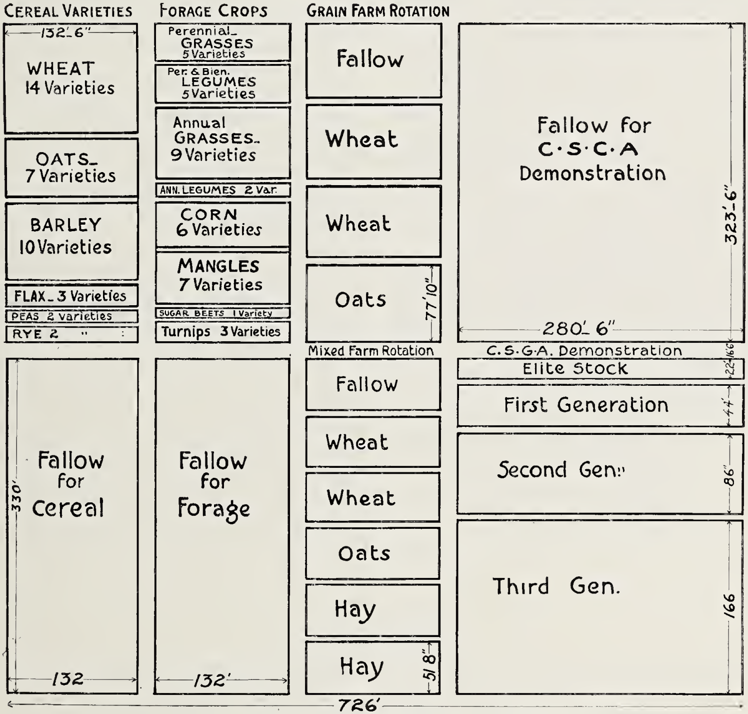
Oat Types—Black Victor, Gold Rain, Abundance, Green Russian.

Oat Varieties—Banner, Victory, Alsasman, Orloff.

Barley—Duck Bill, Canadian Thorpe, Swedish Chevalier, Eclipse O.A.C. 21, Success, White Hulless, Mensury, Manchurian, Silver King.

Flax—Premost, Long Stem, Golden.

Rye—Spring, Fall.



DEMONSTRATION FIELD, NORMAL SCHOOL, BRANDON, MANITOBA

FORAGE CROPS—

Perennial Grasses—Western Rye, Brome, Timothy, Meadow Fescue, Red Top.

Perennial and Biennial Legumes—Alfalfa, Alsike Clover, White Dutch Clover, Red Clover, Sweet Clover.

Grasses, Annual—Sudan, Common Millet, Hungarian Millet, German Millet, Hog Millet, Siberian Millet, Early Fortune Millet.

Corn—Long Fellow, Northwestern Dent, Minnesota 13, Gehu, Quebec 28, Improved Squaw.

FIELD ROOTS—

Mangels—Long Red, Intermediate Red, Globe Red, Long Yellow, Intermediate Yellow, Globe Yellow, Tankard Yellow.

Swede Turnips—Perfection, Bangholm, Jumbo, Common Turnip, Yellow Aberdeen, Devonshire, Graystone, Pomeranian.

Sugar Beets—Klein Wanzelben, Danish Improved.

Carrots—White Belgian, Ox Heart, Red Surrey.

There is also a demonstration of grain growing and mixed farming rotations. The grain growing rotation is as follows:

1st Summerfallow	3rd Wheat
2nd Wheat	4th Oats and barley

The mixed farming rotation is as follows:—

1st Wheat	4th Hay
2nd Wheat	5th Hay
3rd Oats and barley seeded down.	6th Fallow or corn

There is then a demonstration on how seed improvement work may be carried on under Canadian Seed Growing Association rules. Head selections will be made and the different generations of registered seed sown. In connection with this demonstration a portion of the land will be given to potato improvement work.

DAIRY EQUIPMENT AT BRANDON NORMAL SCHOOL

BY B. J. HALES, PRINCIPAL

FOR the instruction of teachers in training at the Brandon normal school there has been added to the equipment sufficient apparatus to enable the class to get full instruction in milk and cream testing, cow testing and butter making, and perhaps a little in simple cheese making. Following is a list of the apparatus:—

4	Eureka Sanitary Churns, No. 1.
4	Shotgun Cream Cans.
4	Lever Butter Workers, No. 2.
4	Butter Printers. No. 2.
½	doz. Dairy Thermometers, No. 5720.
1	Mann's Acid Test.
4	Cream Stirrers.
1	Test Bottle Bath.
2	10-Bottle Babcock Testers.
3	doz. 17-6 c.c. Pipettes.
3	" 18 c.c. "
½	" 9 c.c. "
5	" Milk Bottles.
2	" Cream Bottles.
1	" 17.5 Acid Measures.
1	Lactometer.
1	Burette and Stand 500 c.c.

We have done the milk and cream testing for several years, but only this year have had the equipment for making butter. This work is done under the extension department of the Manitoba Agricultural College, and this year is to be in charge of Prof. Brown, head of the dairying department in that institution. The work started immediately after the Easter holidays and was carried on through the balance of April and will be continued in May. We had had to put it off until somewhat late in order to secure a supply of milk, as it is a rather scarce article this year.

We have a laboratory that we use for general purposes, that has both gas and water and also a tarazza floor, making it quite suitable for dairying work. This will be turned over to the man in charge of the work during the period of his sojourn.

ALBERTA

CIVIC AND SOCIAL TRAINING IN THE AGRICULTURAL SCHOOLS

BY J. McCAIG, M.A., EDITOR OF PUBLICATIONS

AT a meeting of the instructors of the provincial schools of agriculture and officials of the Department of Agriculture for Alberta, held in Edmonton on March 30th and April 1st, some interesting changes were made in the courses for the schools.

THE PROFESSIONAL EFFICIENCY IDEA

People within the province who are able to take advantage of the training afforded by the schools, as well as those who have looked into their work from outside, fully appreciate the good results coming from the education in agriculture provided with the directness and definiteness of method conceived by the Minister of Agriculture in these schools. During the school year just completed, about 350 students were in attendance, in spite of the scarcity of boys and men on the farms, and the heavy drafts on the attendance of the schools themselves, made by the enlistment of students in the armies of the allies. The courses in the schools take account of strictly professional or trade results in agriculture. The work consists of agronomy, animal husbandry, veterinary science, mechanics, poultry, dairying, horticulture, farm management, farm bookkeeping, and domestic science in the first place; the sciences such as chemistry, physics, botany, entomology, and bacteriology in the second place, with the addition of farm mathematics and English, the latter itself being perhaps considered necessary as an instrumental study in relation to the others rather than a study for literary improvement or enjoyment.

THE CONJUNCTIVE NATURE

The changes that have been made are changes that take account of something more than personal efficiency. While it may be considered reasonably well established that a systematic course of training in an applied science cannot be taken without resulting in very desirable disciplinary or even moral results, such as industry, application, concentration, control, and a desire for progressive improvement, no system of teaching can be considered complete that does not take account of the conjunctive and community nature of the student, as well as of his or her personal efficiency. Included in the former interest would be such matters as a knowledge of the functions of the state, the development of aptitude for community and social service and the development of a sense of obligation with respect to both of these.

These claims are finding expression in the introduction of new branches of study in the courses of the agricultural schools. For example in the first year the subject of civics has been added for both boys and girls. This will simply be a brief study of such matters as the community idea, the services furnished by such organizations as the Local Improvement District, the Municipality, the provincial Government, the federal Government, and also the duties and privileges of citizenship in relation to these. It is expected that the result will be a realization of the character of the state as a vital organism. The method of approach will be wholly through concrete materials and critical "close-to-home" discussion.

The training of the second year boys is to be broadened by the addition of a very elementary type of rural economics, which will include such matters as a study of the setting of agriculture among the great industries, the returns from agriculture as a business, its independence from being partly self-sufficing and its dependence on seasonal changes. It will be studied likewise as a mode of life as well as a business. The factors of production, the special types of farm enterprises, different kinds of tenure, etc., will likewise be taken up. The subject of economics in its characteristics form is singularly divorced from things, but it will have to change its guise to get down into the companionship of other studies that have been elementarized to become a part of the school experience of youths. This course will be closely related to the farm management course.

SOCIAL ORGANIZATION

On the side of the girls it is likewise recognized that the aim of education is not simply technical training for an occupation. The name for the new interest being established on behalf of the girls is called rural organization. It might perhaps have been called rural sociology, but the method of approach is intended to be quite concrete, and the teaching will deal with the phenomena of country life and constitutions both as they are found and as they should be. It is a discussion of social experiences, not abstract propositions or principles. The organization of this body of material is intended to bring the girls to a realization that community services are not simply casual, but are the result of inherent conjunctive and social impulses. The course as laid out is explained to be for the purpose of discussing ways of realizing on the institutional and social resources of the country, to develop a broader human and social sense, and to develop leadership in improving organizations. The topics include the study of the resources of the school in relation to attendance, consolidation, sanitation, medical inspection, and children's clubs. The church is dealt with in a similar way. Then voluntary organizations, as the institutes, Red Cross, mothers' clubs, etc., are discussed and, finally, the co-operative associations for production, buying and selling, etc.

The agricultural schools have sounded a new note, at least in their own practice, but there are reasons for expecting that the work will succeed. The adolescent period is the one in which the social and community impulses emerge, and hence in which they should be met or developed instead of being allowed to become atrophied by disuse. Likewise it is the case that the province of Alberta has displayed a wonderful susceptibility to co-operative activities of all kinds, and there is no doubt that the study of community services will meet with a lively response among the young men and young women.

CALF-FEEDING COMPETITION

At the Edmonton spring show, held April 2nd to 6th, the calf-feeding competition for boys and girls was a prominent feature. Sixty-one calves of 1917 were shown by boys and girls between the ages of nine and seventeen years in competition for $1,200 in prizes and

JUDGING IN THE CALF-FEEDING COMPETITION AT THE EDMONTON, ALTA., SPRING SHOW, 1918

a number of valuable specials. Following are the rules of the competition:—

1. Open to boys or girls over nine and under seventeen years of age.
2. Animals entered must be steers or grade heifers calved in 1917.
3. Competitors must have fed, cared for and fitted the animals from the 21st of January, 1918, and must personally exhibit the animal in the show ring at the Edmonton Spring Show, April 2-6, 1918, when judged or paraded.
4. One or more entries may be made from one family or farm, but each competitor can only make one entry.
5. In making entry, the name, address and date of birth of the competitor must be furnished.
6. The date of birth of the animal entered, name of sire, and breed, must be given.
7. Parents', guardians or employers must certify that the boy or girl making entry is over nine and under seventeen years of age, at the Edmonton Spring Show, April 2-6, 1918, and must also certify to the age of the animal exhibited.

The prizes in the regular class were fifteen in number, ranging from $110 to $20. Twenty-six special prizes were also given, consisting of money ranging from $75 to $5, and awards in watches and other goods. In the awards, calves of the Angus breed won first, second, and third place. Herefords stood fourth and eighth, and Shorthorns fifth, sixth, and seventh.

In consequence of the success achieved in the calf-feeding competition, it has been decided to have a similar competition for swine at the Edmonton summer exhibition, when $300 will be distributed in twelve prizes, ranging from $65 down. The competitors must be boys or girls resident in Canada, and between 9 and 17 years of age. Prizes aggregating $400 will also be given at the summer fair for the care and feeding of foals, divided equally between light and heavy horses, and open to boys and girls of the same age.

THE ABERDEEN-ANGUS STEER, WITH WHICH W. A. DAY, A TEN-YEAR-OLD LAD, WON THE FIRST PRIZE IN THE CALF-FEEDING COMPETITION AT THE EDMONTON, ALTA., SPRING SHOW, 1918

PART IV

Special Contributions, Reports of Agricultural Organizations, Publications, and Notes

HOW TEACHERS OF AGRICULTURE ARE TRAINED IN THE UNITED STATES

BY DR. CHESTER D. JARVIS, B.S.A., SPECIALIST IN AGRICULTURAL EDUCATION, U.S. BUREAU OF EDUCATION, WASHINGTON, FORMERLY OF THE ONTARIO AGRICULTURAL COLLEGE STAFF

AGRICULTURAL education in the United States, as a federal enterprise, had its beginning in the passing by Congress of the so-called "Land-grant Act" of 1862, which grants to the several states an amount of land the income from which may be used for the "endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts."

As a result of this legislation, and subsequent Acts augmenting the original grant, there has been established in each of the 50 states and territories a state college of agriculture.

In the early days these colleges functioned largely as secondary schools, preparing men for the occupation of farming. It soon became apparent, however, that in order to exert the widest possible influence in the development of the agricultural industry, and a more wholesome country life, the colleges should devote more attention to training men and women for rural leadership. It was necessary, therefore, to raise the standards of admission and graduation, for students who were preparing to become teachers, investigators, writers, and expert agriculturists. The colleges at the same time continued to offer secondary courses for the benefit of students who were preparing for farm life.

As a result of the activity of the colleges in preparing leaders there has been a gradual development of secondary agricultural schools and of agricultural courses in high schools. With this development has come a realization that in the future the high schools will be expected to assume the responsibility for the training of technical farmers, and that the colleges, in order to meet the demand, will need to devote more attention to the preparation of teachers of agriculture for the secondary schools.

SCARCITY OF EFFICIENT TEACHERS

In response to a growing belief that better opportunities for instruction in agriculture should be provided for boys of high school age, many of the states have made provision for the establishment of secondary agricultural schools, or of agricultural courses in established high schools This has resulted in an unprecedented demand for teachers, and, owing to the limited supply, many untrained and unqualified teachers have been employed. It frequently happened that the schools engaged agricultural college graduates who were without educational training, without teaching experience, and often without, or with very little practical farm experience. In some cases agricultural instruction has been offered by teachers of science, or of other subjects, who have had no agricultural training. As would naturally be expected such instruction oftentimes failed to meet the expectations of an exacting agricultural constituency.

Undoubtedly the practice of using deficient teachers has had a retarding effect upon the development of secondary agricultural education. Not only has it hampered the cause of agricultural education, but the practice has resulted in a great economic loss, as shown by the human product. Furthermore there has been an unappreciated loss in the wasted talents of thousands of young instructors, in both high school and college, who have been turned loose in a classroom without special training for, or guidance in, their chosen careers.

CONGRESSIONAL LEGISLATION

The general belief that the agricultural colleges should devote more attention to the professional preparation of teachers was expressed in 1907, when Congress, in the Nelson amendment to the agriculture appropriation bill, which increased the annual appropriation for the support of the colleges of agriculture, stipulated that "said colleges may use a portion of this money for providing courses for the special preparation of instructors for teaching the elements of agriculture and the mechanic arts." This legislation has been interpreted to mean that federal funds may be used by the colleges for furnishing professional instruction, or teacher-training courses, in addition to that contained in their general agriculture curricula.

The trend of public opinion toward a better system of preparing teachers is shown also in the teacher-training provision in the vocational education act, or the so-called "Smith-Hughes Act," the provisions of which, and its relation to The Agricultural Instruction Act of Canada, were explained in The Agricultural Gazette of March last.

PRESENT STATUS OF TEACHER TRAINING

A recent investigation made for the U. S. Bureau of Education shows that the agricultural colleges in 40 of the 48 states offer special four-year curricula for the training of agricultural teachers. Since this investigation was completed the colleges in the remaining states have established such curricula in order to participate in the benefits of the vocational education act. Thirty-four of the colleges report a total of 859 students registered in 1916-17 for the teacher-training course in agriculture. The same colleges reported that 513 students in 1916 graduated with professional training in agricultural education. Of this number 299 were known to be engaged in teaching or supervising agriculture in the schools.

Of the 40 colleges offering teacher-training curricula 38 require at least 14 standard high school units, or approximately four years' work, for entrance. In addition to this, 32 of the colleges require at least two years of collegiate work before registration for the special education work.

The opportunity for teacher-training in some colleges consists in following one of the regular major options of the agricultural curriculum, which provides for the carrying of enough elective work in education to meet the state requirements for certification. In other colleges, students may follow the regular curriculum for the first two or three years, and then select agricultural education as their major option or subject for specialization. In still other colleges an entirely independent curriculum in agricultural education is offered. In a few cases the students may follow the regular curriculum of the department of education and select agriculture as their subject for specialization.

REQUIREMENTS FOR GRADUATION

The requirements for graduation generally are stated in terms of semester hours. A semester hour represents the work of one hour a week of recitation, or its equivalent in the laboratory, each week for one semester of 18 weeks. The total requirements for graduation range from 120 to 217 semester hours with a medium requirement of 142 hours. The amount of required work in the various groups of subjects varies greatly, but the average requirement is about as follows: technical subjects 50 semester hours; science subjects 40 semester hours; professional subjects (education) 18 semester hours; other non-technical subjects 22 semester hours; elective work 5 semester hours.

Twenty-nine of the colleges claim that practice teaching is required in their teacher-training curricula. In some cases the facilities for practice teaching are inadequate and consist in occasional teaching "short course" students at the college. In most cases, however, the colleges either through co-operation with local schools, or by the maintenance of special training schools, offer satisfactory facilities for such work In almost all cases the colleges, in addition to their requirements in practice teaching, maintain required courses in special methods of teaching agriculture.

In at least 16 of the colleges an approved amount of recent farm experience, either before or after entering college is required. In general the equivalent of one year's experience is required, but two summers' work on a farm usually satisfies this requirement.

GENERAL REQUIREMENTS AND RECOMMENDATIONS

(1) As a general principle it should be the function of the college to train teachers of agriculture for secondary schools, just as it is the function of the normal school to train teachers for the elementary and rural schools.

(2) The requirements for admission to the teacher-training curricula should include four years of high school work, two years of collegiate work, and at least one uninterrupted year of recent farm experience.

(3) The required work for graduation should be distributed among the various groups of subjects about as follows: technical subjects 35 per cent; science subjects 30 per cent; educational subjects (including practice teaching) 15 per cent; other non-technical subjects 20 per cent.

(4) Among other non-technical courses required for graduation should be included strong courses in rural economics and sociology.

(5) The professional training should include, in addition to certain general courses in education, a special course in methods of teaching agriculture, and a course in practice teaching under normal conditions.

(6) The work of supervision of agricultural teaching in the schools should be closely associated with the college from which the teachers come. Such a plan furnishes an opportunity for the colleges to continue the work of instruction after the teachers enter the service.

THE COLUMBINE AS A NATIONAL FLOWER

The following recommendation has been made by the committee, comprising Messrs. W. G. Scott, chairman, F. L. Skinner, and F. W. Broderick, appointed, on the selection of a national flower, at the last annual meeting of the Manitoba Horticultural and Forestry Association, held in Winnipeg, February 21st and 22nd, 1918:

> "We, as a committee appointed on the selection of a flower for a Canadian national emblem, do recommend that the Columbine or Aquilegia be chosen. The fact that the Columbine is native to many parts of Canada, and that it is a plant capable of easy culture, has assisted us in arriving at this conclusion".

ASSOCIATIONS AND SOCIETIES

CANADIAN COUNCIL OF AGRICULTURE

The Canadian Council of Agriculture, of which body the officers for the current year were given in THE AGRICULTURAL GAZETTE for April, has adopted a constitution setting forth that the objects of the Council shall be:

(*a*) To encourage the farm population of the Dominion to organize for the study of educational, economic, social and political problems having a bearing on the happiness and material prosperity of the people.

(*b*) To constitute in itself a medium through which the various organizations in membership may act collectively where their common interests are concerned.

(*c*) To establish a bureau for the collecting and disseminating of statistics and other information bearing on rural welfare.

(*d*) To provide unity of action on matters of common interest to the organizations in membership and to formulate demands for legislation and present the same to the Parliament of Canada.

(*e*) To investigate methods of taxation for providing national revenue and to disseminate the information thus secured through farmers' organizations.

The Council is to consist of the executive (or their appointees) not more than five (5) in number, of the Manitoba Grain Growers' Association, Saskatchewan Grain Growers' Association, United Farmers of Alberta, Alberta Co-operative Elevator Company, Grain Growers' Grain Company, United Farmers' Co-operative of Ontario, United Farmers of Ontario, *Grain Growers' Guide*, Saskatchewan Co-operative Elevator Company, and any other provincial wide farmers' organizations that may be admitted into membership by a majority vote of those present at any regularly constituted meeting of the council, provided that notice of application for admission has been given by the secretary in writing to each of the members not less than thirty (30) days prior to such meeting.

The executive committee is to consist of a president, vice-president, secretary-treasurer and two members of the Council, to be elected at the annual meeting.

Ten members representing not less than five organizations are to constitute a quorum for the transaction of business at an annual or special meeting. A lesser number of representatives may adjourn the meeting. The Council is to hold meetings at least twice a year.

The time and place of meeting are to be fixed by the president, provided, however, that a meeting must be called when requested by any three organizations having membership in the Council.

Each shareholder organization in membership is required to pay an annual fee of ten cents per shareholder, with a minimum of one hundred dollars, and each other organization in membership is required to pay an annual fee of not less than one hundred dollars. The necessary travelling expenses of representatives when attending meetings of the Council will be paid by the Council.

UNITED FARMERS OF NEW BRUNSWICK

About 1,000 of the leading farmers of the counties of Carleton, York, and Victoria, N.B., attended a convention at Woodstock, on April 23rd, the object being to organize the United Farmers of New Brunswick. Mr. J. J. Morrison, of Arthur, Secretary of the Ontario branch of the United Farmers, was present to help in the organization. Half a dozen resolutions were adopted as follows: Requesting that the provincial Public Works Department pay for breaking open and snow ploughing all winter roads; asking that all dealers in mill feeds be licensed and compelled to sell at lawful prices; declaring the convention was in hearty accord with the movement for greater production; recommending that two experienced farmers be appointed on the Railway Commission; resolving to nominate experienced farmers in every rural constituency in future elections in the province, and recommending that an abattoir be established at St. John. The following officers were elected: President, C. L. Smith, Woodstock; first vice-president, T. W. Caldwell, Florenceville; second vice-president, A. Chapman, Pinder; executive, Judson Corey, Kincardine; John Fulton, Wicklow; A. A. H. Margison, Centreville; Chas. R. Enman, Killowen, and John Young, Glasgow; organizer, C. L. Smith, Woodstock, N.B.

DECORATION DAY PROPOSED

BY GEORGE DOUGLAS, SECRETARY, THE GARDENERS' AND FLORISTS' ASSOCIATION OF ONTARIO

At a regular meeting of the Gardeners' and Florists' Association of Ontario held on April 16th, the subject of choosing a flower to become the national flower for the Dominion of Canada was discussed. The following resolutions were passed:—

1. That the maple leaf shall be our National Emblem to be used in the Coat of Arms and all seals and crests of the Dominion.

2. That this Association expresses the view that no one flower will be a success on the graves of our heroes in France and Flanders.

3. That this Association request that the provinces of the Dominion be asked to choose a flower for their emblem, these flowers to be planted on the graves of our heroes both in Canada and abroad.

4. That this Association recommend to the Government of the Dominion that the day peace is declared, that day be known as Decoration Day in everlasting memory of our heroes who fell for liberty.

MANITOBA HORTICULTURAL AND FORESTRY ASSOCIATION

STANDARD FOR JUDGING VEGETABLES

The Manitoba Horticultural and Forestry Association at their latest annual meeting adopted the standard for judging vegetables herewith given. The committee that gave the standard its final revision consisted of Mr. F. W. Brodrick, Professor of Horticulture at the Manitoba Agricultural College, Mr. W. T. Macoun, Dominion Horticulturist, and Mr. S. R. Henderson, a prominent horticulturist of Manitoba.

THE STANDARD

Asparagus.—Shoots should be thick, of medium length (8″ to 9″) uniform in thickness, tender, and free from rust and insect pests. Long shoots are liable to be weedy and tough.

Beans.—Broad Beans—Straight, broad, well-formed pods filled with large tender beans. Free from disease; String Beans—Pods would be long, straight, moderately broad, tender, and free from disease. Pods should be uniform. Colour according to variety.

Beets.—Long—Should be medium in size, smooth and free from side roots, gradually tapering from crown to tip, and firm in texture. Cross-section cuttings should show fine dark red, tender flesh, free from white lines. Top small and compact. Roots should be uniform; Round—Medium in size, firm, with smooth round shape gradually tapering to a fine terminal root. Flesh should be tender, firm, fine, and of a dark red color. Roots should be uniform.

Cabbage.—Early—Generally round or heart-shaped; the head should have fair size, be heavy, firm, hard, and free from insect injury or disease. Late—Heads round or slightly flattened in shape, with a dense formation of dark green outer leaves, and inside leaves of a cream colour. Specimens should be heavy and have firm texture. Red—Slightly conical or round in shape, dark red in colour, texture firm and solid, with good weight. Savoy—Round and slightly flattened; leaves close and compact, of a dark green colour with a fine curl—good weight.

Carrots.—Long—Roots should be long, straight and smooth without any green at the crown; have a small compact top, be free from side roots, and gradually taper from crown to tip. Texture, tender and crisp. Heart, small with a large outer ring. Roots should be uniform; Medium—Medium length, straight, free from side roots and gradually tapering to a blunt tip. Skin smooth. Cross-sections should show a small core and a large outer ring. Flesh should be tender and have a rich flavour. Roots should be uniform.

Cauliflower.—Head, large in size with a dense formation of flower, pure white in colour and without small leaves in the head. Shape, round horizontally, with a nice, even, curving crown. Cauliflower should be exhibited with a few of the lower leaves attached.

Citron.—Large, well-rounded, heavy specimens, finely mottled and well-coloured throughout.

Celery.—Bunch, composed of several long, well bleached stems of medium diameter, free from rust and rot, with a crisp texture, and rich nutty flavour. Leaves, straight and even. Heart, large.

Corn.—Sweet—Cobs should have fair size and be well developed, with straight, even rows, well filled out at base and tassel end. The kernels should be tender, juicy and sweet. Ears should be uniform.

Cucumbers.—Indoor—Should be long, smooth, with size well carried out towards the ends. Dark green in colour; heavy. Outdoor—Specimens should be smooth in form, straight, of medium length, with thickness carried well out towards the ends; of a dark green colour and heavy weight. Specimens should be uniform.

Lettuce.—Cabbage—Heads should be large, well-rounded, compact, composed of crisp, sweet leaves, free from any discolouration. Cos—Conical in shape with straight upright growing leaves, well bleached and crisp, and with a firm heart.

Onions.—Large—Shape, globular or flat, according to variety; globular shape preferred. Should be smooth and even in form, of good weight, and have a small well-ripened neck, with solid firm texture, especially at the base of the neck; Pickling—Should range from ½″ to ¾″ in diameter, be uniform in size and shape, clean, firm and white in color. Specimens should be uniform.

Parsley.—Head, large and bushy with numerous, finely curled, dark green leaves, which should be crisp and free from discoloration of any kind.

Parsnips.—Roots should be of medium length, broad at top with a nicely hollowed crown, gradually tapering from crown to tip, smooth and straight, skin free from rust, firm in texture, and have a small core.

Peas.—Pods long and straight, dark green in colour and well-filled with large sweet-flavoured, tender peas. Samples should be uniform in size and colour, and not over-ripe.

Potatoes.—Specimens should have uniformity in size, with smooth even shape, firm, solid flesh, fine and white in colour, and be clean, and free from disease of any kind. Potatoes with shallow eyes are preferred to those with deep eyes.

Pumpkin.—Round or oblong in shape, symmetrical, large, thin-skinned, closely ribbed, firm in texture and heavy; with deep yellow or creamy yellow colour according to variety.

Rhubarb.—Stalks, medium in diameter, long, straight and tender; with uniform colour and mildly acid flavour.

Radish.—Summer and Winter—Medium size, smooth, even form, free from insect damage and side roots; firm texture and mild flavour. Cross-sections should show solid fine white flesh. Specimens should be uniform.

Salsify.—A good type resembles a well formed parsnip, broad at top, smooth and straight, gradually tapering to tip, free from side roots, texture firm and crisp, skin light brown in colour. Flesh should have a milky appearance when cut, and a small core.

Spinach.—Specimens should be large with heavy foliage; broad, dark green, tender leaves, free from disease and insect injury.

Squash.—Winter—Should be large, heavy and firm in texture, with colour and shape according to variety. Should not be over ripe.

Vegetable Marrow.—Large size, oblong in form, smooth and even, with uniform thickness and good weight. Texture firm and not over-ripe. Colour varies from a creamy yellow to a mottled green.

Tomatoes.—Medium in size with an even, well-rounded shape, smooth, fine well-coloured skin, firm texture, good weight and a small eye. Not over-ripe. Blossom end should be left on sample. Colour varies according to variety—may be pink, bright red, or yellow. Specimens should be uniform.

Turnips.—Medium size with smooth symmetrical form, free from side roots, firm in texture, and heavy. Cross-sections should show fine, firm, evenly coloured flesh. Colour varies from white to light yellow.

Relative to the foregoing standard of vegetables, Mr. O. J. Robb, Olericulturist at the Horticultural Experiment Station, Vineland, Ont., expressed the opinion that the standard is very complete and fills a want regarding the judging of vegetables. Mr. Robb adds that he notices there is no mention of melons in this list and has furnished the following:—

Melons.—Medium in size according to variety, heavy uniform netting on outside, not over ripe and flesh either green or pink, deep flesh, firm, crisp and sweet. Thin rind. Specimens to be uniform.

EDMONTON SPRING SHOW AND BULL SALE

The first week in April was devoted in Edmonton to the annual holding of the Edmonton spring horse show and bull sale. In regard to the latter, 115 Shorthorns were sold at an average price of $234.26, 17 Herefords at an average of $217.65, 8 Aberdeen-Angus at $225.63, and 1 Holstein at $135, making a total of 141 bulls sold at an average of $231.06, and bringing a total of $32,580. The bull which sold for the highest price was the Shorthorn Iron Lad, 89098, sired by Iron Duke 76260, consigned from Vegreville. The champion bull of the show, Sir Irwin, by Roan Chief, sold for $500. A horse sale was also held, being the first in connection with the show. One Belgian sold for $450, 3 Clydesdales for $3,985, and a Suffolk Punch for $285. The outstanding price was $2,000 paid for the Clydesdale Cumberland Seal 14769, being the highest price ever paid for a Clydesdale sold at public auction in the West.

In regard to the horse show, the directors adopted the policy of eliminating the show classes as much as possible in favour of the utility classes. There were 228 exhibitors this year, compared with 145 last spring. There were 1,010 animals stabled on the grounds, against 839 in 1917.

BUTTER COMPETITION IN BRITISH COLUMBIA

The British Columbia Dairymen's Association has arranged for the holding of a season's butter competition extending over a period of five months. The exhibits will consist of one 14-lb. box of butter solid pack (salted) to be made between the 1st and 15th of each month and sent to cold storage not later than the 20th of each month to be held there until judged at the end of the season. Detailed records of each churning of butter from which the exhibit is made will be kept for purposes of reference and comparison. An opportunity will be afforded at the close of the competition to all interested to make a study and comparison of the exhibits. The competition is divided into five classes, one for each month. The association will award to the exhibitors receiving the highest average score (1) a gold medal or gold watch valued at $40; (2) a silver medal valued at $20; (3) solid gold cuff links valued at $12.50. The money for the prizes to be awarded has been contributed by different firms and makes a total, besides specials, of $250. No exhibitor will be entitled to a prize who does not answer the questions required in connection with the "history sheet" for each churning represented in the several exhibits made by him. The butter will be judged on the following points:—

Flavour	45
Texture	25
Salting	10
Colour	10
Package	10

WESTERN CANADA IRRIGATION ASSOCIATION

The next annual meeting of the Western Canada Irrigation Association will be held at Nelson, B.C., toward the end of July. Mr. Robert J. C. Stead, Calgary, the acting secretary, announces that the exact date has not yet been fixed.

NEW PUBLICATIONS

THE DOMINION DEPARTMENT OF AGRICULTURE

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF ECONOMIC FIBRE PRODUCTION

Grow Flax for Fibre, Special Circular No. 20, is a four-page leaflet showing the importance of increasing the production of flax in Canada and giving a few cultural hints.

THE DIVISION OF HORTICULTURE

Vegetable Gardening at Home and on Vacant Lots, by W. T. Macoun, Dominion Horticulturist. This is 12-page circular No. 14, of the Horticultural Division, and is intended as a guide for the amateur gardener. It deals with the preparation of the soil, arrangement of the garden, the varieties of vegetables it is advisable to cultivate, and the protection of the plants from insects and disease.

The Potato in Canada; its Cultivation and Varieties. In consequence of the widespread demand for the bulletin with this title noticed in THE AGRICULTURAL GAZETTE for April, page 407, a popular edition of 16 pages has been issued. It contains in condensed form practically all the information supplied in the first instance, including a list of varieties recommended for different districts in each of the provinces.

THE ENTOMOLOGICAL BRANCH

Crop Protection Leaflets.—Four more of these leaflets have been issued by the Entomological Branch as follows: "Cutworms and Their Control," "Prevent White Grub Injury," and "The Pea Weevil," all by Arthur Gibson, Chief Assistant Entomologist, in charge of Field Crop Insect Investigations, and "Arsenate of Lime," by George E. Saunders, Dominion Entomological Laboratory, Annapolis Royal, N.S.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE

NEW BRUNSWICK

The Annual Report of the Director of the Elementary Agricultural Education Division of the New Brunswick Department of Agriculture for the year ending October 31st, 1917, goes into full particulars, with statistics of attendance, of the records of the pupils for the year. It deals generously with the progress made in school and home gardening.

QUEBEC

The Provincial Department of Agriculture has issued a series of circulars dealing with "Brood Hens and Chickens", "White Diarrhoea in Chickens" and "Grain Economy in the Poultry House". The last mentioned suggests rations appropriate to these war times. Bulletin No. 55 on "Poultry Raising in Towns and Villages", also issued by the Department, gives diagrams and descriptions of cheap and convenient buildings for poultry raising as well as some advice on the selection of birds. A leaflet deals with the "Means of Fighting Caterpillars of Various Kinds".

ONTARIO

The 12th Annual Report of the Horticultural Societies, 1917. This report makes a blue book of 112 pages with numerous illustrations, and gives a verbatim report of the 12th annual conference held at Toronto, November 21st and 22nd. It contains a series of articles by recognized authorities on amateur gardening and the cultivation of various plants.

War-Time Foods and Cooking, Circular No. 11, Women's Institutes. This is a 32-page circular giving recipes and information regarding the preparation of foods becoming to the times.

Variety of Farm Crops, by Dr. C. A. Zavitz, Professor of Field Husbandry, Ontario Agricultural College, Guelph, is the title of a four-page leaflet giving a brief, summarized description of the various crops grown in Ontario.

Sugar Beets, by C. A. Zavitz, B.S.A., D.Sc., Professor of Field Husbandry, Director of Field Experiments, and A. W. Mason, B.S.A., Assistant Experimentalist, is Bulletin 262 of the Ontario Agricultural College, and deals with the market that exists for sugar beet products. It also describes the varieties of sugar beets and the methods of cultivation.

Agricultural Societies' Report, 1917. This report of 126 pages contains the results of competitions in standing field crops and prize winning grain at Winter Fairs and at Toronto and Ottawa exhibitions in 1917. It also contains instructions to judges.

Mr. Geo. A. Putnam, Superintendent of Women's Institutes, has prepared a booklet of eight pages for the use of the Junior Women's Institutes of Ontario, that points out the conditions, uses, and advantages of the Institutes to girls.

Elementary Agricultural Classes, Report of the Inspector for 1917. This report makes a blue book of 60 pages. It gives a summarized account, with plentiful illustrations, of all the classes throughout the province. An introductory note states that agriculture as a regular subject of the public school curriculum is proceeding rapidly all over Ontario.

Summer Courses and Examinations.—The syllabus of summer courses and examinations for certificates covers a wide field, including agriculture, horticulture, art, manual training, household science, vocal music, physical culture, commercial subjects, kindergarten subjects, auxiliary classes and French.

MANITOBA

The Provincial Department of Agriculture has issued a circular regarding the "Marketing of The Manitoba Wool Crop for the Season of 1918." It sets forth that the Department will act as agents for the farmers up to July 10th and receive the wool delivered in Winnipeg, where it will be weighed, sorted and graded under the supervision of graders supplied by the federal Department of Agriculture. The wool will then be sold.

Hatching, Brooding, Rearing, and Feeding Chicks, is a 16-page bulletin issued by the Provincial Department of Agriculture, and written by Professor Herner of the Agricultural College. Professor Herner commences before the egg is made, and shows how a little care in selecting the right hens would improve the strain. Photographic cuts are given of freak eggs and other peculiarities of poultry. Hens and incubators are discussed, and the questions of brooding and feeding are fully gone into.

Extension Bulletins Numbers 25 and 26, published as a part of the Manitoba Farmers' Library Series, deal with gophers and squirrels and flax-growing. Mr. V. W. Jackson, professor of biology, is the author of the bulletin on "Gophers and Squirrels," and also of a supplement on "Wood Ticks and Other Ticks.' The bulletin is liberally illustrated, and goes fully into the subject.

The bulletin on 'Flax-Growing" has been compiled by the Field Husbandry staff of the provincial Agricultural College and contains information on every point relative to the cultivation of the plant.

BRITISH COLUMBIA

Silage Aids Production, by R. J. Ferris, Silo Demonstrator. This is a twelve-page bulletin showing the progress the silo has made in the province, and describing, with illustrations, its uses, construction, and advantages.

The Report of the Director of Elementary Agricultural Education and Summer School for Teachers for 1916-17, has been reprinted from the Public Schools Report in an illustrated pamphlet of 24 pages, containing details regarding the different schools and short courses.

Boys' and Girls' Competitions. Bulletin No. 78 of the Live Stock Branch of the provincial Department of Agriculture gives the complete results of the different competitions, as well as the rules and regulations governing them.

MISCELLANEOUS

Reconstruction. Under this heading the Department of Soldiers' Civil Re-establishment, has issued a pamphlet dealing with the economical aspect of the situation as affecting returned soldiers, and explaining the various vocations in which they can be employed.

Canadian Society for the Protection of Birds. The report of the secretary and acting treasurer for the year beginning 1916-1917, published in pamphlet form, gives the proceedings of the third annual meeting with illustrations.

The agricultural section of the Organization of Resources Committee of Ontario has published a 16-page pamphlet entitled, "Why Waste Your Garbage." It comprises a report by the commission appointed by the agricultural section to investigate the feeding of town and city garbage to swine. The main contribution is made by Mr. Justus Miller, B.S.A., Assistant Commissioner of Agriculture for Ontario.

The Dominion Shorthorn Breeders' Association, under the secretaryship of Professor G. E. Day, has issued a series of leaflets giving reasons why the Shorthorn for beef and dual purpose should be especially bred.

The Determination of the Moisture-Content of Flour, by Frank T. Shutt, D.Sc., Dominion Chemist, and P. J. Moloney, M.A. A paper read dealing with this subject at the May meeting 1917, of the Royal Society of Canada, has been published in separate pamphlet form in Series III, Volume II, of the transactions of the society. It records the results of work undertaken in the laboratories of the Dominion Experimental Farms in the weekly determination of the moisture content of a number of flour samples.

NOTES

Beginning the first of July, the College of Agriculture of the University of British Columbia will commence a three-months' short course for returned soldiers.

The Parks Superintendent of Victoria B.C., has been given instructions to prosecute a vigorous campaign against crows. They are said to have played havoc among chickens, and to have driven practically every other bird out of the parks.

Mr. W. J. Reid, B.S.A. Director of Agricultural Instruction, Department of Agriculture, Prince Edward Island, and Mr. J. E. McLarty, of the Rural Science Department, Prince of Wales College, Charlottetown, have resigned from their respective offices to take up farming in Western Canada.

Canada was one of the last countries to adopt the daylight saving policy. The day following the passing of the law in Canada Spain enacted a similar measure. The plan is observed in the United States and most of the European countries, including England, France, Italy, Germany and Austria-Hungary.

Speaking recently at a meeting of he juvenile agriculturists of Brooklands and Weston, Mr. J. H. Evans, Deputy Minister of Agriculture for Manitoba, stated that engaged in the greater production movement in Manitoba there were 25,000 members of the Boys' and Girls' Clubs, an increase of 9,000 over last year, and of these 25,000, upwards of 50 percent were children whose parents are of foreign extraction.

Miss Hazel McCain of Florenceville, N.B., has been appointed Supervisor of the Women's Institutes for the province of New Brunswick to take the place of Miss Hazel Winter, who recently resigned. Miss McCain holds a superior teacher's license in New Brunswick and is a graduate of the Lilian-Massey School, Toronto. Recently she was engaged by the Military Hospitals Commission as Dietitian in their clearing depot, Quebec.

In the fall of the year 1818, or a hundred years ago, the Quebec Agricultural Society held a cattle show and ploughing match at which the following prizes, among others, were given: For the best stallion of the genuine Canadian breed of any age, £10;

to the person raising the greatest weight of wheat per arpent, £20; to the farmer and others inventing the best, simplest and least expensive machine for threshing wheat, or other small grains, £6; to the ploughmen performing the best work with the least amount of labour, £5.

In his annual report Mr. J. Lockie Wilson, Superintendent of Horticultural Societies of Ontario, says that 1917 was the banner year of the society. This organization has now a paid membership of upwards of 18,000 and new societies are continually applying for incorporation. Mr. Wilson adds that thousands of bushels of valuable gardening products have been produced through the efforts of these societies, whose motto is, "Cultivate every foot of ground, so that our great alliance for freedom's cause may be maintained."

The Dominion Club, a men's association recently formed in connection with Dominion Church, Montreal, has undertaken the cultivation of a large tract of land in Westmount. Plans were made to secure seeds and plants at a minimum of cost, and to adopt a uniform style for the arrangement of the lots, which were 25 ft. by 50 ft. The production of potatoes on a community plan has also been taken up, and what was formerly a part of the Westmount golf links has been put under cultivation. The members of the club participating in the production work were assessed $10 each to meet the cost of seed and such labour as was required.

The superintendent of the Toronto Vacant Lots Cultivation Association, Mr. Geo. Baldwin, F.R.H.S., announced recently that they had approaching 1,750 vacant lots under cultivation. The movement in Toronto started in 1914, when seventy-five vacant lots were put under cultivation. In 1915, there were 120, and, in 1917, 826. The Association prepares the land, and charges the cultivator $2 for seed. This year 150 soldiers and soldiers' wives, who get everything free, are cultivating lots. According to Mr. Baldwin, the yield of the lots averaged last year about $40 each, although several had yielded products the actual value of which reached $130. Many women are cultivating gardens, as are members of church associations and pupils of schools. The staffs of the hospitals are bending their energies to the raising of vegetables for the consumption required at those institutions. Members of the West End Young Men's Christian Association have fifty acres under cultivation.

In a series of short courses carried on by the University of British Columbia for returned soldiers, forty-four returned men took the course in fruit growing, and forty-eight in agronomy and animal husbandry. For a later course in agriculture and farm work that will begin on the first of July, the Military Hospitals Commission is contributing a grant of $3,000. The course will be three months in length, with provision for extension to six months. Requests for short courses in poultry keeping, vegetable gardening, apiculture, and dairying, have also been made by returned men.

The Health Committee of the Winnipeg City Council have suggested that the following recommendations be embodied in a bylaw: That no dairyman who fails to obtain 350 points out of a possible 500 on the city score card be granted a license to sell milk; that milk coming from any dairy scoring less than 350 shall be pasteurized; that any dairyman who neglects to report a case of sickness occurring on his premises, whether of an infectious or non-infectious character, shall have his license cancelled; that any licensed dairymen purchasing milk from any other than a licensed dairyman shall have his license cancelled; that no license shall be granted where the dairy premises are situated on less than three acres of land; that action be taken by the city to obtain from the provincial Government such legislation as may be required to bring dairies supplying the city under the Dominion regulations relating to tuberculosis.

The Lincoln Greater Production Company has been formed to farm some of the 3,000 acres of vacant land in the vicinity of St. Catherines. The company has been organized under the Joint Stock Companies' Act with a capital of $25,000. The business men are very favourably impressed. A retired farmer has been engaged as manager at $100 a month and his expenses while farming operations are going on. Working in conjunction with the farm manager is an advisory committee of five successful farmers and the Agricultural Representative, who will assist and advise the manager and pass on all accounts to be rendered for payment. The manager has a car which is used as a light livery truck, and also a Fordson tractor with supplementary ploughs, discs, harrows, seeders, etc., totalling in value the sum of $2,000. The company has 25 acres under spring wheat, 15 acres of oats, and 10 of flax, and expects to put in 200 or 300 acres of fall wheat. Any rentals paid so far have not exceeded $3 per acre, plus taxes, the use of much of the land being donated.

INDEX TO PERIODICAL LITERATURE

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- Production, R. J., Ferris, Silo Demonstrator, page 5.
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- The Fight Against the Green Apple, W. H. Brittain, Provincial Entomologist Truro, N.S., page 79.
- May—Celery Blight and its Prevention Professor J. E. Howitt, Ontario Agricultural College, Guelph, page 117.
- Combless Packages, Wm. A. Weir, Assistant Apiculturist, Guelph, Ont., page 123.

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- Canadian Grown Root Seed Better than Imported, Dr. M. O. Malte, Dominion Agrostologist, page 515.
- April 27—Winter Killing Causes Most Failures—Factors Which Prevent It, R. Summerby, Macdonald College, Quebec, page 551.

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- April 11—The Outlook for Canadian Dairying in 1918, A Survey of Present Conditions and a Forecast of Future Production.
  - Nova Scotia, W. A. MacKay, Dairy Superintendent, page 394.
  - Quebec, J. C. Chapais, Assistant Dominion Dairy Commissioner, page 394.
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  - British Columbia, T. A. F. Wiancko, Assistant Dairy Instructor, page 418.
  - Saskatchewan, F. M. Logan, Dairy Commissioner, Saskatchewan page 418.

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- Fate of Pig Crops Depend on Methods, W. F. Stevens, Live Stock Commissioner for Alberta, page 548.
- Special Need for Organization at this Time. Address by E. L. Richardson, President, Alberta Agricultural Fairs Association, presented at Annual Meeting, page 552.
- April 10—Putting Farmers on a Par with Manufacturers, W. F. Stevens, Live Stock Commissioner for Alberta, page 610
- April 17—The Story of a Grain of Wheat, Dr. C. A. Zavitz, Professor of Field Husbandry, Ontario Agricultural College, page 664.
- Milking Machine Problems, R. W. Brown, Professor of Dairying, Manitoba Agricultural College, page 665.
- May 1—Corn for Fodder in Western Canada, W. C. McKillican, Superintendent Experimental Farm, Brandon, Man., page 747.

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- The Barberry and Wheat Rust, Professor J. E. Howitt, Ontario Agricultural College, Guelph, Ont., page 770.
- The Milking Machine, John M. Trueman, Truro N.S., page 773.

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- Learning of the Whims of the Tractor, Professor W. H. Day, Ontario Agricultural College, page 8.
- Soluble Sulphur an Apple Spray, G. E. Saunders, Dominion Entomological Laboratory, page 12.
- Extracing the Fangs from Wild Land, Professor J. McGregor Smith, University of Saskatchewan, page 13.

The Grain Growers' Guide, Winnipeg, Man., April 10.
- Canada's First Farm Survey, A. Leitch, B.S.A., Farm Department, Ontario Agricultural College, Guelph, Ont., page 773.
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- Plans for Increasing Production in Quebec, Dr. A. T. Charron, Chief of the Greater Production Service, page 162.
- The Young Pigs, Professor G. E. Day, page 168.

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- Co-operative Egg Marketing in Denmark, T. A. Benson, Dominion Poultry Representative for Alberta, page 548.
- Steer Feeding Experiment at Indian Head, W. H. Gibson, Superintendent, Experimental Farms, page 570.

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- Canada's Standard Flour, Miss M. A. Purdy, Demonstrator in Chemistry, O. A. C., page 361.

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PART V

The International Institute of Agriculture

T. K. Doherty, LL.B., Commissioner

FOREIGN AGRICULTURAL INTELLIGENCE

All communications in regard to this section should be addressed to T. K. Doherty nternational Institute Commissioner, Department of Agriculture, West Block, Ottawa.

SCIENCE AND PRACTICE OF AGRICULTURE

GENERAL INFORMATION

1110—**Decree of the Minister of Agriculture Creating a Service of Agricultural Material in France.**—*Journal officiel de la République Française*, Year 49, No. 281, p. 8166. Paris, October 16, 1917.

Under date of October 15, 1917, the French Minister for Agriculture has published the following decree:

Art. 1.—A Service of agricultural material is instituted at the Ministry for Agriculture (Direction of Agriculture, Office for agricultural information).

Art. 2.—This Service has the function of providing material, particularly machinery, instruments and products required for agriculture.

It promotes the formation of industrial, commercial and agricultural groupings to facilitate production, exportation, distribution, sale and purchase and puts these associations into connection with manufacturers and industrial and commercial associations.

It provides for a just distribution of metals between makers and controls the prices, so as to avoid large increases.

Art. 3.—The head of the office for agricultural information, sent by the Minister of Agriculture as delegate to the Commission for metals and war manufactures, directs the Service for agricultural materials. He signs the correspondence of the Service and gives endorsements and permits. The questions prepared by the Service, which should be approved by the Minister, are signed by him and presented to the Director of Agriculture.

Art. 4.—The Director of Agriculture is responsible for carrying out this decree.

1112—**Agricultural Development in South Africa.**—In *The Board of Trade Journal*, Vol. XLVIII, No. 1086, pp. 627-630. London, September 20, 1917. (2 pp. in Institute Bulletin).

1113—**Studies of Food Utilisation: the Utilisation of Carbohydrate on Relatively High and Relatively Low Cereal Diets** — Zentmire, Zelma and Fowler, Chester C., in the *Journal of Biological Chemistry*, Vol. XXXII, No. 1, pp. 77-85, bibliography of 25 publications. Baltimore, October, 1917.

This study was carried out at the Laboratory of Physiological Chemistry of the Iowa State College, in order to ascertain how much, if any, difference occurs in the utilisation by the organism of cereal protein and cereal carbohydarte when ingested in varying amounts in the form of thoroughly cooked "cream of wheat". The article analysed gives the results relating to the carbohydrates.

The experiment lasted 3 weeks, divided as follows; 5 days of lower cereal diet; 5 days of higher cereal diet; 2 days each of nitrogen-free lower, and higher starch diets; preliminary and intermediate periods of 2 days each in which a simple mixed diet was ingested. To the cream of wheat and the starch pudding were added only small quantities of milk, sugar and butter.

The cereal and starch were boiled a few minutes on the stove, then placed in a large fireless cooker overnight.

In all cases the lower diet was equal to half the higher diet.

The results obtained led to the following conclusions:

1) The utilization of total carbohydrates of a diet consisting largely of cereal is above 99 per cent.

2) The carbohydrate is as completely utilized with one quantity as another of cereal in the diet, even when the cereal is taken in larger amounts than are found in the average dietary.

3) Monotony and unpalatability of diet have little or no effect upon the ultimate utilisation.

CROPS AND CULTIVATION

1114—**Relation of the Water-Retaining Capacity of a Soil to its Hygroscopic Coefficient.**—ALWAY, F. J., and MCDOLE G. R., in the *Journal of Agricultural Research*, Vol. IX, No. 2, pp. 27-71, bibliography of 25 publications. Washington, 1917. (2 pp. in Institute Bulletin).

1115—**On the Supposed Relative Unilateral Impoverishment of the Soil in Nitrogen, Phosphoric Acid and Potassium by Various Crops; Action of the Root System of the Plants.**—MODESTOV, A., in *Agricultural Gazette*, No. 8 (176), pp. 174-176. Petrograd, February 25, 1917.

It is generally admitted that various crops impoverish the soil in nitrogen, phosphoric acid and potassium in various proportions. This has led to distinctions being made in this respect between different groups of plants; for example, cereals are considered particularly exacting in nitrogen and phosphoric acid, whereas tubers demand much potassium, etc. These considerations are included in the principles of crop rotation.

The author acknowledges that the various cultivated plants extract fertilizing elements from the soil in different proportions, but, on the basis of calculations concerning the average yields of the various crops (wheat, oats, beet, potato, buckwheat, clover, etc.), he concludes that the *total* quantities of nitrogen and phosphoric acid extracted from the soil by these plants are *almost equal*, so that it is not possible to admit a relative unilateral impoverishment in these two elements by the different crops. On the other hand, there are differences in the total quantities of *potassium* extracted by the crops.

These conclusions, based on elementary calculations, clash with the present theory of crop-rotation.

How then is it possible to explain the fact that, with crop rotation, a given plant, wheat for eaxmple, gives higher yields with continuous cropping? Thus, in the experimental fields at Poltawa (Russia), wheat following after wheat yielded 8¼ cwt. per acre, whereas, following on plants which extract the same quantity of nitrogen and phosphoric acid, it yielded from 9½ to 11 cwt. of grain per acre. The potassium has not been taken into consideration, because wheat requires but little, and it was precisely after crops demanding much potassium (beets, potatoes, buckwheat, etc.) that it gave the highest yields. In this case it is impossible to talk of a *minimum* of potassium resulting from a relative unilateral improverishmnet. It is clear that here the rotation of the crops has no importance.

If indeed this increased yield of wheat does not depend on rotation (in the sense either of a relative unilateral improverishment or enrichment), what is the probable cause of the decreased yields given by continuous cropping of the same plant and the increased yields obtained by rotation? The author believes it may be accounted for by the following causes:

1) *Total quantity of moisture extracted from the soil by various crops.* It must be noted that root crops, which extract 1.6 times more moisture from the soil than wheat, cannot, in this respect, have any beneficial influence on the following wheat crop, rather they will have deprived it of water in advance.

2) *Physical condition of the soil.* This is more favourable to nitrification and the accumulation of moisture in the case of hoed crops than in that of wheat. It is to the better physical condition in which hoed plants leave the soil that their beneficial influence on the following crops must be attributed rather than to the different requirements of the crops in fertilizing elements.

3) *Differences in the root system of the plants cultivated.* If, for example, beets and oats are compared from this point of view there is reason to believe that the point of contact of the roots with the soil particles differs in the two plants. On the other hand, the principal parts of the roots of oats and beets develop in different layers of the soil. The author believes this difference in the position of the root system of the plants grown is the real cause of the favourable action of crop rotation.

Attention is also drawn to the different dissolving capacity of roots of various plants and to De Candolle's theory of poisoning of the soil. Finally the author points out the necessity of examining the prevailing theory of soil "fatigue", which attributes this fatigue to a relative unilateral impoverishment of the soil in nitrogen, phosporic acid and potassium in plants which are cropped continuously, for, as has been seen, this impoverishment cannot be sufficiently great to be of practical importance.

1116—**The Effect of Soil Reaction on the Availability of Ammonium Sulphate.**—COOK, R. C., and ALLISON, F. E., in *Soil Science*, Vol. III, No. 5, pp. 487-498. New Brunswick, N.Y., 1917.

1117—**Livestock and the Maintenance of Organic Matter in the Soil.**—FIPPIN, E. O., in the *Journal of the American Society of Agronomy*, Vol. 9, No. 3, pp. 97-105. Lancaster, Pa., 1917.

1118—**Soil Constituents Which Inhibit the Action of Plant Toxins.**—TRUOG, E., and SYKORA, J., in *Soil Science,* Vol. III, No. 4, pp. 333-352, bibliography of 48 publications. New Brunswick, N.Y., April, 1917. (1 page in Institute Bulletin).

1120—**Variations in the Chemical Composition of Soils in the United States.**—ROBINSON, W. O., STEINKOENIG, L. A., and TRY, W. H., in *United States Department of Agriculture, Bulletin* No. 515, *Contribution from the Bureau of Soils.* Washington, 1917.

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1122—**On the Physiology and Biology of Nitrogen-Fixing Bacteria.**—OMELIANSKY V. L., in the *Archives des sciences biologiques de Pétrograd,* Vol. XIX, No. 3, pp. 209-227, 1916; summary by SAZERAC, R., in the *Bulletin de l'Institut Pasteur,* Vol. XV, No. 5, pp. 133-134. Paris, 1917. (1).

1123—**New Method for the Estimation of "Zeolitic" Silicic Acids in Soils.**—GUEDROITZ, G., in *Review of Experimental Agronomy dedicated to the memory of* P. S. KOSSOVITCH, Vol. XVII, No. 5, pp. 400-407. Petrograd, 1916.

1125—**Irrigation and Manuring Studies; The Effect of Varying Quantities of Irrigation Water and Manure on the Growth and Yield of Corn.**—HARRIES, F. S., and PITTMAN, D. W., in *Utah Agricultural College Experiment Station, Bulletin* No. 154, pp. 29, figs. 14. Logan, Utah, April, 1917.

1126—**Comparative Value of Legumes as Green Manure.**—JOHNSON, MAXWELL O., THOMPSON, ALICE R., and SAHR, C. A., in *Hawaii Agricultural Experiment Station, Honolulu, Press Bulletin,* No. 52, 14 pp. 6 fig. Honolulu, February 24, 1917. (2 pp. in Institute Bulletin).

1127—**Studies of Leguminous Plants as Green Manure.**—GANGULEE, N., in *The Poona Agricultural College Magazine* Vol. VIII, No. 3, pp. 141-156. Poona, 1917. (2 pp. in Institute Bulletin).

1128—**Potassium Chloride from Mother Liquor in Manufacture of Sea-Salt.**—NISHIMURA, T., in *Kogyo-Kwagaku-Zasshi,* Vol. XX, pp. 587-624, 1917; abstract in *Journal of the Society of Chemical Industry,* Vol. XXXVI, No. 19, p. 1046. London, October 15, 1917.

1133—**Environment of Seeds and Crop Production.**—HALSTED, BYRON D., and OWEN, EARLE J., in *The Plant World,* Vol. 20, No. 9, pp. 294-297. Baltimore, September, 1917. (2 pp. in Institute Bulletin).

1134—**Studies of the Phosphorus and Potassium Requirements of the Barley Plant During its Different Periods of Growth.**—PEMBER, F. R., in *Agricultural Experiment Station of the Rhode Island State College, Bulletin* 169, pp. 50, Kingston, R.I., U.S.A., 1917. (2 pp. in Institute Bulletin).

1135—**Daily Variation of Water and Dry Matter in the Leaves of Maize and the Sorghums.**—MILLER, E. C., in *The Journal of Agricultural Research,* Vol. X, No. 1, pp. 11-45. Washington, D.C., July 2, 1917. (3 pp. in Institute Bulletin).

1142—**The Improvement of Hops by Crossing and Selection.**—SALMON, E. C., in the *Journal of the Institute of Brewing,* Vol. XXIII, No. 2, pp. 60-82. London, 1917. (2 pp. in Institute Bulletin).

1143—**Experiments in Crossing Varieties of Tomato in the United States.**—JONES, DONALD F., in *The American Naturalist,* Vol. LI, No. 610, pp. 608-621. New York, 1917. (3 pp. in Institute Bulletin).

1144—**Sugar Beet Seeds, in France.**—SAILLARD, EMILE, in *Comptes rendus des Séances de l'Académie des Sciences,* Vol. 165, No. 16, pp. 508-510. Paris, October 15, 1917.

Before the war, over 10 million pounds of sugar beet seeds were used annually in France; 4-5ths of these came from abroad, especially from Germany.

During the 10 years 1904-1913, the author carried out cultural experiments with a view to comparing the French varieties with the best German varieties. In 1915 he came to the following conclusions: "In 1905 the best French varieties produced less sugar per acre (about 125 lbs. less) and had a lower sugar content (0.9% less). At the present time they yield as much, and sometimes more, sugar per acre and are not more than 0.3 to 0.4 % inferior in sugar content. It is, therefore, possible to produce in France seeds equal to those which came from Germany".

In 1916 and 1917, practically only Russian and French seed was used in France, particularly Russian seed.

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(1) See also Bulletin of Foreign Agricultural Intelligence, Dec. 1916, No. 731.

Owing to lack of labour the author has been unable to continue his comparative experiments, but has continued to follow the development of the beet harvest, as he has done every year since 1901. He summarises the results of his studies as follows:

1) Sugar beets have been practically as rich in 1916 and 1917 as in the 10 years previous to the war. The yield of sugar per acre has, perhaps, been a little lower, but it should be noted that cultural conditions have been less favourable owing to the insufficiency of manuring and tillage, both applied too late.

2) During the 10 years (1904-1913), the sugar content per week, per acre or per root was highest at the beginning of September (507½ lbs. per acre, 7.95 grammes per root). During the two years 1916 and 1917, this maximum was a little later.

The figures quoted refer to good crops and exceed the current averages.

1145—**The Cultivation of Wheat by Early Sowing and Hilling-up.**—DEVAUX, H., in *Comptes rendus des Séances de l'Académie d'Agriculture de France*, Vol. 3, No. 31, pp. 910-913. Paris, October 17, 1917. (1 page in Institute Bulletin).

1146—**Cultural Experiments with Different Varieties of Wheat at Ultuna, Sweden.** NILSSON, GEORG, in *Sveriges Utsadesforenings Tidskrift*, Year XXVII, Pt. 3, pp. 122-135. Malmo, 1917. (2 pp. in Institute Bulletin).

1147—**Cultural Experiments with Different Varieties of Wheat at the Ostergotland Agricultural Experiment Station, Sweden**—SUNDELIN, GUSTAV, in *Sveriges Utsadeforenings Tidskrift*, Year XXVII, Pt. 3 pp. 136-153. Malmo, 1917. (2 pp. in Institute Bulletin).

1148—**Red Fife Wheat in the South-West of France.**—PERICHON, A., in the *Journal d'Agriculture pratique*, Year 81, New Series, Vol. 20, Nol 22, pp. 426-427. Paris, November 1, 1917.

1149—**The Most Favourable Times for Sowing Wheat and Rye at Alnarp, Sweden.**—FORSBERG, L., in *Tidskrift for Landtman*, Year 38, No. 35, pp. 583-589. Lund, 1917.

1150—**Cultural Experiments with Different Varieties of Oats in Norway.**—KNUT, WIK, in *27de Aarsberetning (for 1915-1916) om Norges landbrukshoiskobes Akerceksforsok*, Christiania, 1917.

This paper gives the results of cultural experiments made in 1915 and 1916 with 40 varieties of oats, amongst which were largely represented the best types created at Svalof, which have rapidly spread throughout the Scandinavian countries.

1153—**Effect of Removing Blossom on Yield of Potatoes.**—*The Gardeners' Chronicle*, Vol. LXII, No. 1610, p. 178. London, November 3, 1917.

Among the experiments carried out during the present year by Messrs. Sutton & Sons at Reading, those relating to the effect of the removal of the blossoms on the yield of potatoes are of special interest.

A table in the Institute Bulletin gives the results in detail and from it will be seen that, in five out of seven plots experimented upon, picking of the blossoms resulted in an increased yield, and that the average increase was by no means negligible, amounting to 215 lbs. or an increase of 5 per cent.

1156—**The Sugar Beet in the La Plata District (Argentine and Uruguay).**—PING, N. J., in *Anales de la Sociedad rural Argentina*, Year LII, Vol. 41, No. 6, pp. 460-462. Buenos-Aires, August, 1917. (1 page in Institute Bulletin).

1157—**The Irrigation of Sugar Beets.**—HARRIS, F. S., in *Utah Agricultural Experiment Station, Bulletin* No. 156, pp. 24. Logan, Utah, June, 1917. (2 pp. in Institute Bulletin).

In the United States the beet sugar industry has proved to be most successful and has found its greatest development under irrigation ; in fact, most of the sugar beets of the country are now produced with the aid of irrrigation water. The expense of raising an acre of beets is, however, so great that every condition should be as favourable as possible in order to prevent losses. Unless the soil and moisture conditions are favourable it is impossible to get a crop of sugar beets sufficiently large to pay the cost of production. The cost of raising an acre of grain is relatively low, and if the crop is poor the loss is slight; with beets the farmer cannot afford to have a failure. These conditions make it especially desirable to understand the water requirements of the sugar beet plant.

The writer reviews the literature on the irrigation of beets with reference to twenty works by various authors.

When the beets were watered each week during the growing season, one inch of water weekly gave a higher yield than did more than this quantity; but when one irrigation was given it was most effective when applied at the time the beets averaged about two inches in diameter.

Irrigating the land after the seed was planted and before the plants were up reduced the yield below that where no irrigation water was applied. The least desirable time to apply water after the plants had begun to grow was just before the beets were ripe. When the water was applied at the proper time, two or three irrigations of five inches each gave practically as good results as where more water was used.

Proportionately more tops were produced by the high and the later irrigations than by the opposite conditions. The percentage sugar and the purity were higher in the irrigated than in the non-irrigated beets, except where the irrigation water was added very late. The highest percentage of sugar resulted from irrigation water applied when the beets were about two inches in diameter.

Contrary to popular opinion, the length of beets was not increased by delaying the time of applying the first irrigation. The percentage of forked beets bore no consistent relationship to the amount of irrigation water applied. Irrigation water affected the average size of beets in practically the same manner that it affected the total yield.

To sum up, sugar beets do not require large quantities of irrigation water if it is properly applied, but they are sensitive as to the time it is given.

1163—**Experiments in the Cultivation of Medicinal Plants at the Agricultural Station of Bezentchuk, Russia, in 1916.**—KOULTCHITZKY, I. in *The Agricultural Gazette*, No. 3, pp. 71-73; No. 4, pp. 94-96; No. 5, pp. 119-121. Petrograd 1917. (1 page in Institute Bulletin).

1167—**Fruit Nomenclature (Fourth Conference of the Pomological Committee of Australia, 1917.**—)PESCOTT, E. E., [in *The Agricultural Gazette of New South Wales*, Vol. XXVIII, No. 8, pp. 578-590. Sydney, August, 1917. (2 pp. in Institute Bulletin).

1173—**Reforestation on the National Forests of the United States.**—TILLOTSON, C. R., in *United States Department of Agriculture, Bulletin* No. 475, *Contribution from the Forest Service, Professional Paper*, pp. 63. Washington, May 2, 1917.

The Bulletin analysed is a revised edition of a preceding one (No. 98 by W. T. Cox), but it has been brought up to date as regards the results of the reforestation work of the Forest Service in the United States and the methods at present employed.

In the United States National Forests there are about 5,600,000 acres to be reforested. The greater part of this area consists of land where former forests have been entirely destroyed by recurring fires. The complete restocking of the area now denuded, or sparsely timbered, will increase the annual wood production at least 3,000,000,000 feet. For this reason, reforestation is an essential feature of National Forest Administration.

The bulletin analysed contains a description of the methods of collecting and preparing forest seed.

The following data, which are of considerable practical interest, are obtained from the various tables given.

	Trees per acre —	Seed per acre — lbs.	Net cost per pound —
Douglas fir	10	35.00	$0.66—1.36
Western yellow pine (*P. ponderosa* Law)	5	30.00	0.41—0.67
Lodgepole pine (*P. murrayana* Engelm)	40	8.00	1.70—2.00
White pine (*P. strobus* L.)	7	7.00	2.43—2.83
Norway pine (*P. resinosa* Ait.)	5	4.00	2.63—3.19
Engelmann Spruce (*Picea engelmanni* Engelm.)	12	12.00	1.00—2.41
Sugar pine (*Pinus lambertiana* Dougl.)	8	89.60	0.50—0.65

Of a total area of 124,732 acres covered up to June 30, 1915, 84,320 acres were seeded directly and 40,412 acres were planted.

The writer describes the methods of sowing and planting adopted, gives the figures, the rules to be observed, and the relative cost per tree, region and method.

1174—**Forest Products of Canada.**—I. BATES, J. S. (Superintendent of the Forest Product Laboratories of Canada) and LEE, H. N. (in Charge of Timber Physics), Canadian Woods for Structural Timbers, in *Department of the Interior, Canada, Forestry Branch, Bulletin* No. 59, 44 pp. Ottawa, 1917.—II. Forest Products of Canada, 1916, Pulpwood, *Ibid., Bulletin* No. 62-*b*, 12 pp. Ottawa, 1917.

1175—**Mechanical Properties of Woods Grown in the United States.**—NEWLIN, J. A., and WILSON, T. R. C., in *United States Department of Agriculture, Bulletin* No. 556, *Contribution from the Forest Service, Professional Paper*, 47 pp., bibliographical index. Washington, September 15, 1917.

The increasing scarcity of many species of timber which had become more or less standard in various wood-using industries, is opening the field for other species; hence it is necessary to have definite information and data which render it possible to compare the properties of a known species with those of any other.

The publication analysed gives practical data that can serve as a basis for: 1) the comparison of the different species; 2) the selection of species suitable for special requirements; 3) the compilation of reliable figures for tests of the resistance of the various woods.

The data are based upon about 130,000

tests (of 126 different woods) carried out by the Forest Products Laboratory, which is maintained by the United States Forest Service with the co-operation of the University of Wisconsin. It is planned to continue the series of tests until all species of wood which are important, or which give promise of becoming so, have been included. The data are given in 2 series of tables, one for green wood and the other for air-dry wood. The scope and method of experiments are first set forth, together with a definition of the terms used.

1176—**Yields from the Destructive Distillation of Certain Hard-Woods in the United States.**—PALMER, R. C., in *United States Department of Agriculture, Bulletin* No. 508, *Contribution from the Forest Service*, Professional Paper, 8 pp. Washington, 1917.

LIVE STOCK AND BREEDING

1180—**The Susceptibility of the Prairie Dog to Rabies.**—WALTERS, GEORGE, in *Journal of the American Veterinary Medical Association*, Vol. 41, New Series, Vol. 4, No. 5, pp. 702-704. Ithaca, N.Y., August, 1917.

1181—**The Chicken Mite (Dermanyssus gallinae); Its life History and Habits.**—WOOD, H. P., in *U.S. Department of Agriculture, Bulletin* No. 553, 14 pp. Washington, August, 1917. (2 pp. in Institute Bulletin).

1182—**Studies on the Metabolism of Fats in the United States.**—I. LYMAN, J. F., The Utilization of Palmitic Acid, Glyceryl Palmitate, and Ethyl Palmitate by the Dog, in *The Journal of Biological Chemistry*, Vol. XXXII, No. 1, pp. 7-11. Baltimore, October, 1917.—II. LYMAN, J. F., The Effect of Feeding Free Palmitic Acid, Glyceryl Palmitate and Ethyl Palmitate on the Depot Fat in the White Rat. *Ibid.*, pp. 13-16.

1184—**A Comparative Study of the Feeding of Cattle and Pigs with Regard to Meat-Production.**—GOUIN, A., and ANDOUARD, P., in *Le Genie Civil*, Vol. LXXI, No. 40, pp. 157-158. Paris, September 8, 1917. (2 pp. in Institute Bulletin).

1187—**The Abderhalden Test for Pregnancy in Animals.**—ZELL, C. A., in *Journal of the American Veterinary Medical Association*, Vol. III, New Series, Vol. V, No. 1, pp. 39-47. Ithaca, N.Y., October, 1917. (2 pp. in Institute Bulletin).

1189—**Prospects for American Purebreds.**—WENTWORTH, E. N., in *The Field Illustrated*, Vol. XXVII, No. 3, pp. 182-183 and 212. New York, March, 1917.

The pure bred animals of America, according to the writer's estimate, represent only 2.46 per cent of the American live stock industry, as shown by the following table.

Kind of Stock	Total Number in U.S. (Jan. 1, 1916)	Total Number Pure Breds (Jan. 1, 1916)		Per Cent Pure Breds
		Registered	Unregistered	
Horses	21,166,000	171,200	14,340	0.88
Beef cattle	38,453,000	812,000	243,600	2.69
Dairy cattle	21,998,000	567,000	170,000	3.36
Sheep	49,162,000	354,000	141,600	1.07
Swine	68,047,000	1,220,000	1,220,000	3.58
Total	199,826,000	3,124,200	1,789,540	2.46

These pure bred animals constitute the foundation stock. Each has been improved to perform a certain function better than the average of its species, and its value is measured by the degree to which it can transmit this performance to its offspring. Pure bred males are of two classes: those whose function will be to sire only market animals, and those whose function will be to sire more seed stock. As far as numbers are concerned the first class is predominant, although constructive breeding, even the future of breeds themselves, depends on the few reserved for the second purpose. Approximately 90 to 95 per cent of males are included in the first class, draft horses alone excepted, while only 5 to 10 per cent belong to the second. In fact this restriction is so great, that only 3 to 5 per cent of all registered animals living four or five generations ago are enumerated in modern pedigrees. There are therfore two types of livestock men in America: the constructive breeders and the producers. If the pure breds America has to-day can supply the necessary sires for the production herds, as well as the necessary seed stock, the demand will be fulfilled. As a matter of fact, this demand is not supplied at present, witness the exceptional auction prices of the last few years. Hence a healthy growth in the number of pure breds may be expected. Seed stock will still be needed and there will be room for thousands of additional breeders. Provided that the stockman is not a speculator, there is no business in which future success is more certain; 2.46 per cent of pure breds where 5 to 7 per cent may be necessary is a margin of surety for years to come for all careful and conservative American breeders.

1190—**The Rehabilitation of the Milking Shorthorn in the United States.**—WEIS, P., in *The Breeder's Gazette*, Vol. LXXII, No. 12, pp. 324-326. Chicago, September 20, 1917.

It is a significant fact that the controversy about the Milking Shorthorn breed ceased almost simultaneously with the beginning of the rise in beef prices. Until two years ago even authorities on the dual-purpose question believed quite generally that the breed would be confined to the east and northwest of the United States and to the general farmer. But when the first volume of the Milking Shorthorn Yearbook was compiled by the American Shorthorn Breeders' Association two years ago the fact was revealed that the breed was not confined to those parts of the country only but was beginning to make friends everywhere. Today the call for breeding stock is almost as strong in the south as in the north.

There is no doubt that if breeders of Milking Shorthorns would have followed the policies of breeders of dairy cattle in advertising their breed by the creation of a number of phenomenal milk records, progress would have been made more rapidly. That this would have been possible is shown by the attainment of a number of high records such as Rose of Glenside's 18,075 pounds of milk in a year, and others, but breeders of the dual purpose Shorthorn are laying more stress on the attainment of moderate long distance records under ordinary farm conditions rather than on the attainment of short-time phenomenal records made under the most favourable conditions.

At the close of 1916 the Record of Merit list for the breed contained the names of 427 animals. Of this number 99 cows have made more than 10,000 lbs of milk a year, and 278 well over 8,000 and under 10,000 lbs. During this year a large number of Shorthorn cows has been put under official test and there will be a perceptible increase of animals with authentical milk records at the end of 1917.

There were about 260 breeders of milking Shorthorns at the beginning of 1917 distributed over 33 states, and indications are that the year will close with well above 300 breeders in every State of the Union.

The first public sale of milking Shorthorns was held in America in March, 1916; an average of $562 was realized on 54 head. The second sale resulted in an average of $751. Prevailing prices for dual-purpose Shorthorns are a fair reflection of the rapidly increasing demand for this kind of stock.

If breeders keep up their efforts toward a still better and more beautiful animal, their ultimate success in the complete rehabilitation of the breed will be but a matter of a few years.

1191—**The 15th Egg-Laying Test at Hawkesbury Agricultural College, New South Wales, April 1, 1916.—March 31, 1917.**—ROSS, G. D., and HADLINGTON, JAS., in *Department of Agriculture, New South Wales, Farmers' Bulletin* No. 114, pp. 21. Sydney, July, 1917. (2 pp. in Institute Bulletin).

1200—**The Possibility of Breeding the Walrus (Trichechus latirostris) for Meat Production in the United States.**—*The Journal of Heredity*, Vol. VIII, No. 8, pp. 339-345. Washington, 1917. (1 page in Institute Bulletin.)

1201—**Skunk Breeding in the United States.**—*The Journal of Heredity*, Vol. VIII, No. 10, pp. 452-454. Washington, October, 1917.

The skunk has hitherto been regarded as a noxious pest, a destroyer of birds and their eggs and as the agent of frequent depredations on the hen-roost. Now, however, it is being recognized as one of man's valuable allies, not only because it destroys many animals which are injurious to agriculture, but also on account of its increasing value as a fur-producer. More than a dozen of the States have already passed laws protecting the skunk, and probably their example will be followed by other States. Already more than 500 persons are engaged in various parts of the United States in breeding skunks, either selling the skins to furriers or disposing of the live animals to others who wish to start fur farms, which are very remunerative.

Skunks are commercially divided into 2 general classes; the spotted and the striped. The first is small and its skin is not so highly prized. When this pelt is put on the market, it is generally called "civet". The second type of skunk produces a pure black pelt (which is the most valuable) or else skins ranging through the intermediate graduations to pure white. Ordinary raw skins are worth from $3 to $6 apiece.

Mr. Detlefsen, of the Department of Genetics, University of Illinois, has found a number of mutations which are valuable for their types of fur and he is breeding these and making a study of colour inheritance in the skunk. Some breeders state that they have already been able, by several generations of careful selection, to procure pure black animals which appear to breed true to type.

The principal objection to skunk fur is its strong smell which it is often practically impossible to remove, although gasoline is of value, as a deodorant, while chloride of lime works very effectually. The scent is ejected by the animal from two oval sacs situated just below the tail. Most skunk breeders remove these scent glands when the animal is quite young by means of a simple operation. One breeder, however, declares that when skunks are reared in captivity and treated with kindness, they no longer throw their scent and therefore any operation is unnecessary. Skunks are easily tamed. The females breed once a year, generally in the early spring. They have 6 to 12 young in a litter. The animal is adult at 6 months old.

FARM ENGINEERING

1202—**Electric Ploughing.**—DELAMARRE, A., in *Revue Générale de l'Electricité*, Vol. I, No. 18, pp. 691-700, figs. 14. Paris, May 5, 1917. (3 pp. in Institute Bulletin).

1203—**The Choice of the Type of Agricultural Tractor Suited to French Conditions**—DE PONCINS, A., in *La Vie Agricole et Rurale*, Year 7, No. 40, pp. 237-244. Paris, October 6, 1917. (3 pp. in Institute Bulletin).

Drying Plants.—In *Weekly News Letter*, United States Department of Agriculture, Washington, April 10, 1918.

Establishment by municipalities from municipal funds of drying plants for fruits and vegetables where conditions are favourable is referred to in Farmers' Bulletin 916. "A Successful Community Drying Plant", published by the United States Department of Agriculture.

In municipal plants, the bulletin says, the work should be supervised by the city council or other town authorities. If the plant is not a municipal plant, it is best to place it under the guidance of some association already in existence, such as a civic improvement club, commercial club, home-garden club, or a special community club organized for the purpose.

As an example of a club that can be formed for the purpose the bulletin tells of one community that has a drying plant and in which a special community club of approximately 60 farmers has been organized primarily to look after the operation of the drying plant. The officers—president, vice-president, secretary, and treasurer—constitute the executive committee and are entrusted with power to act. A simple form of constitution and by-laws has been adopted and meetings of the club are held monthly or oftener, usually at the drying plant, which is in this instance in a room of a church building.

Municipal or government owned drying plants have been in successful operation in European countries for years. Such plants provide village communities with a convenient and simple method of drying all sorts of produce of the home garden and orchard, as well as the vegetables and fruits shipped to the community, which might be allowed to go to waste at the stores and market places. The drying plant described in the bulletin follows closely the specifications of a community plant at Lincoln, Nebraska, and 11 others in that general section, all of which were successfully operated during the summer and fall of 1917.

The advantage to the busy farmer's wife in the country community can not be overestimated, says the Bulletin. Her work is heaviest in the summer when vegetables and fruits must be saved for winter use. The establishment of a community drying plant at a consolidated school, country church, or centrally located farm home would offer a great relief from heavy kitchen duties.

The drying plant described in the bulletin uses an adaptation of the electric fan process of drying. A stream of dry air is caused to flow continuously over the products being dried. The humidity of the air, the method of preparation of the vegetables, and the velocity of the air current have much to do with the rapidity of drying. It is a utilization of the same principle by which wind will dry roads after a rain or by which damp clothes hung in a breeze will dry much more quickly than those hung in quiet air. Another feature of the drying plant described is that instead of the air being forced across the vegetables it is drawn across them. Laboratory tests indicate that drying is considerably accelerated when the suction method is used, although the force method will dry satisfactorily and is used in at least one Nebraska plant. The bulletin says that such a plant should be operated without expert help and by power easily available and can be built complete for $250 or less. Plans and specifications for building such a plant are given in the bulletin.

The most important feature to watch in the construction of a drying plant of this type is the fan. The main point to keep in mind is to get one that will move a sufficient quantity of air. If the fan will move air fast enough for the suction to hold a piece of cardboard or other material 1 foot square and weighing 8 ounces against the wire screen at the intake end, the drying will proceed satisfactorily. Any type of fan can be used, and among those that have been found efficient are an old ensilage cutter blower fan, a separator fan used on a blower threshing machine, and a fan which has been discarded by a planing mill after use there in drawing sawdust and shavings from the planing machines. The fan may be operated by an electric motor of from 2 to 5 horsepower, or by a gasoline engine of similar power.

Nebraska's experience with community drying indicates that ordinarily a better coloured and better flavoured product is obtained if no artificial heat is applied. Even in arid countries, however, and always in humid countries, it is best to have equipment for heating. This will be needed when the air contains much moisture. An effective method of heating the air is by the use of a hot-water radiator at the intake end of the drier.

Fruits and vegetables meant for the drier should be prepared by cleaning as for table use. After cleaning they should be sliced thin. The slicing process may be hastened by use of a slicing machine.

After a sufficient amount of moisture apparently has been removed, it is well to keep the product for several days in a large container that can be protected by either a cloth cover or a wire screen. After a few days, if there are no indications of moisture collecting on the dried product, it should be placed in pans in the oven or exposed to the sun or air currents for a few hours and then packed in permanent containers. The enemies of dried fruits and vegetables are moisture, insects, and rodents, and successful storing will depend on protection against them.

1204—**Attachment for Adapting a Motor-car to Agricultural Traction.**—*Scientific American*, Vol. CXVII, No. 11, pp. 196, New York, September 15, 1917. (1 page in Institute Bulletin).

1205—**Rick Drying by Machinery.**—*The Implement and Machinery Review*, Vol. 43, No. 510, p. 608. London, October 1, 1917.

1206—**Electricity Applied to the Threshing and Drying of Cereals, in Italy.**)—TARCHETTI, A., in *Il Giornale di Risicoltura*, Year 7, No. 18, pp. 229-234. Vercelli, September 30, 1917. (1 page in Institute Bulletin).

1209—**Apparatus for Determining the Water Content of Cheese.**—I. TROY, H. C., in *Hoard's Dairyman*, Vol. LIV, No. 1, p. 4. Fort Atkinson, Wisconsin, July 27, 1917.—II. *The Journal of Agriculture*, Vol. XXI, No. 3, pp. 41. Quebec, Canada, September 15, 1917. (1 page in Institute Bulletin).

1212—**The Construction of Pit Silos (1) in the United States.**—PRYSE, METCALFE, T. and SCOTT, GEORGE, A., in *United States Department of Agriculture, Farmers' Bulletin*, No. 825 pp. 14. Washington, 1917.

Pit silos are becoming common in many sections of the Great Plains region of the United States, where wooden silos, weaken rapidly owing to the peculiar weather conditions obtaining there. The farmer with the help of his ordinary farm hands can construct a pit silo fairly cheaply.

The site chosen should be a firm, well drained soil. The cylindrical type is the one usually chosen. The depth of the silo depends on the quantity of silage to be stored, but rarely exceeds 36 feet. The walls are plastered about one inch thick with mortar made of one part cement and 2 or 2½ parts of clean, sharp sand. The bottom is left bare. A concrete curb is made before digging the pit, a 4 feet wall being afterwards built on it; concrete, brick, tile blocks, etc., may be used. A hoisting apparatus is mounted over the silo to provide for easy and rapid removal of the silage.

The bulletin summarised describes the construction of these silos, the method of digging out the soil, the choice of site; it indicates the dimensions, (2 tables) and gives details regarding filling, removing the silage for feeding, cautions against poisonous gases in the silo and the construction of a cover. A number of figures clearly illustrate the information given. At the end of the bulletin a list is given of all the bulletins previously published by the U.S. Department of Agriculture with regard to silage and the construction of silos.

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(1) See also Bulletin of Foreign Agricultural Intelligence, August, 1916, No. 333.

AGRICULTURAL INDUSTRIES

1223—On the Formation of "Eyes" in Emmenthal Cheese.—CLARK, W. M., in *Journal of Dairy Science*, Vol. 1, No. 2, pp. 85-113. Baltimore, U.S.A., July, 1917.

1227—The Handling and Storage of Apples in the Pacific North West —RAMSEY, H. J., MCKAY, A. W., MARKELL, E. L., and BIRD, H. S., in *U. S. Department of Agriculture, Bulletin* No. 587, 32 pp. Washington, September 8, 1917.

During the seasons 1911-1912 to 1914-1915, inclusive, extensive investigations were conducted by the United States Department of Agriculture to determine those factors which are of the greatest importance to the successful cold storage of the apples of the Pacific Northwest. For this purpose, apples were secured from the various more important apple-growing sections of Washington, Oregon, Idaho and Montana.

The experiments conducted at 32° F (0° C.) storage showed: A wide range in the cold-storage keeping qualities of different varieties, depending upon the decay, skin blemish, texture changes, etc., which they develop.

A 2-weeks' delay between the picking and storage of apples often greatly reduces their keeping properties through more rapid ripening and the development of scald, Jonathan spot, scab (due to *Venturia inaequalis* and V. *pomi*) and decay.

A temperature of 32° F will keep apples longer and in better condition than will a 35° F temperarure, the difference in favour of the former increasing with the time in storage.

Immature picking results in severe scald and early decay of apples in storage.

The storage of over-mature apples is equally bad, or worse, than the storage of immature apples, resulting in more rapid deterioration than with those picked and stored at proper maturity.

Well-coloured portions of the skin seldom, if ever, develop scald.

Carelessness in handling is responsible for considerable decay of apples in storage, and freedom from bruises and skin abrasions is fundamental to successful storage.

Apples from orchards badly infected with northwestern anthracnose are likely to decay early in their storage life.

In conclusion, it is pointed out that successful cold storage of apples is as much the result of the treatment they receive before being placed in cold storage, as of the conditions and temperatures under which they are kept in storage. The responsibility rests as much with the producer and handling organizations as with the cold-storage warehousemen.

1228—**Report of the Committee on Statistics of Milk and Cream Regulations of the Official Dairy Instructors' Association of the United States.**—In the *Journal of Dairy Science*, Vol. I, No. 1, pp. 45-83. Baltimore, U.S.A., May, 1917.

This survey of the milk and cream regulations of the cities and towns of the United States, includes 194 headings and subheadings pertaining to laws and ordinances designed to regulate the production, care and sale of milk and cream and presents a mass of statistics of particular interest to all persons interested in this problem.

The order in which the different arguments are discussed is the following: Permits of licenses; Chemical composition; Bacteria; Temperature; Specific gravity; Conditions which render Milk Unsalable; Parturition; Tuberculin testing of cows; Stables; Stable Yards; Water Supply; Milkers; Milk house; Milk utensils; The Scoring of Dairy Farms; City Milk Plants; Delivery waggons; Labeling and sale; Penalties.

Out of this survey of milk and cream regulations of the cities and towns and states of the United States, the committee has concluded that:

1) there is a great and urgent need that the definite information now available should be placed in the hands of those who are responsible for the laws and ordinances governing the production, transportation, handling and sale of milk; and

2) there is a great and urgent need for further research and study on the part of dairy investigators of some of the problems involved in the production and handling of milk.

PLANT DISEASES

1229—**Experiments on Potato Leaf Curl, in France.**—BLANCHARD and PERRET, in *Comptes rendus des Séances de l'Académie d'Agriculture de France*, Vol. III, No. 31, pp. 894-895. Paris, 1917.

The experiments, carried out in 1914 in the Department of the Loire, do not permit the cause of this disease to be diagnosed with certainty. At the most they prove that, if there be parasitism, infection takes place neither through the soil nor through the skin of the tuber. The investigations must be continued another year.

Numerous observations made on extensive crops seem to point to the fact that leaf curl is a purely physiological disease. The disease appears to show a kind of degeneration in certain varieties of potatoes, due to excessively prolonged asexual reproduction, too frequent replanting in the same soil, cultivation in soils containing sufficient potassium but too little nitrogen (the element which favours the development of the leaves). It seems to prove that the plant is suffering from nitrogen starvation, or rather, that it has difficulty in assimilating this element.

From a practical point of view it should be noted:—

1) That all varieties are not equally subject to the disease;

2) That all plants of the same variety are not equally attacked;

3) That fresh seed and nitrogenous manure diminish the disease.

Therefore, until an efficacious remedy is found, it is advisable:—

1) To grow the most resistant varieties in each district ("Violette d'Auvergne", "Andrés", Fluck géante", "Saucisse rouge", in the central Massif district);

2) to renew the seed potatoes frequently; in the Loire district especially, seed potatoes introduced in large quantities from the west, have given the growers entire satisfaction;

3) to select, at harvest times, good varieties; in other words, to choose the spring seed potatoes from the most productive and strongest plants;

4) to give the plantation a minimum of 220 cwt. of well prepared farmyard manure;

5) to apply the nitrogen treatments late. Copper treatment, so efficacious against mildew, has no effect on leaf curl.

1231—**The "Little Leaf" Disease of the Vine in California.**—BIOLETTI, FREDERIC T., and BONNET, LEON, in the *Journal of Agricultural Research*, Vol. VIII, No. 10, pp. 381-397. Washington, D.C., 1917. (1 page in Institute Bulletin).

1232—**Plant Diseases Recently Observed for the First Time in Canada.**—GUSSOW, H. T., in *Science*, New Series, Vol. XLVI, No. 1189, p. 362. Lancaster, Pa. 1917.

1241—**Fusarium coeruleum the Cause of the Dry Rot of the Potato Tuber in the British Isles.**—PETHYBRIDGE, GEORGE H., and LAFFERTY, H. A., in *The Scientific Proceedings of the Royal Dublin Society*, Vol. XV. (New Series), No. 21, pp. 193-222, Plates VI-VII. Dublin, 1917.

The dry-rot of the potato tuber which commonly occurs in the British Isles is caused by *Fusarium coeruleum* (Lib.) Sacc. The 2 species, *F. oxysporum* Schlecht and *F. trichothecioides* Woll., which are largely responsible for a somewhat similar type of rot in certain parts of the United States of America, have not been met with in this connection up to the present in the British Isles.

On a single occasion, *F. arthrosporioides* Sherb. was found, and proved to be capable of causing a dry-rot of the potato tuber. Further research may perhaps show that this, and possibly some other species of *Fusarium*, are occasionally responsible for the production of dry-rot in Britain.

F. coeruleum does not produce hadromycosis of the potato plant, nor does it kill the latter by attacking its roots. It can destroy tomato fruits, but does not attack onions, mangels, carrots, parsnips or apples. Infection frequently occurs through mechanical wounds, such as those caused by implements, by bruising and by breaking off the sprouts. It may occur also through scab spots (*Oospora Scabies*). Wounds, however, are not essential, for infection can take place through the lenticels, eyes, or young sprouts of uninjured tubers.

Potatoes become more susceptible to infection as they become more mature, hence the rot is more prevalent during the latter than during the earlier period of storage. Some varieties of potato (Eclipse, Windsor Castle and Epicure) are more resistant to infection than others.

Affected tubers cannot be cured, and the application of sulphur or lime for preventing infection or retarding the rot, is of no practical value.

1246—**The Discovery of Urediniae of Cronartium Ribicola on Stems of Ribes hirtellum in Maine, United States.**—POSEY, G. B., GRAVATT, G. F.,COLLEY, R. H., in *Science*, New Series, Vol. XLVI, No. 1187, pp. 314-315. Lancaster, Pa., 1917.

1247—**The Treatment of Mildew of the Peach Tree (Oidium leucoconium).**—SAVASTANO, L., in *R. Stazione sperimentale di Agrumicoltura e Frutticoltura, Acireale, Bollettino*, No. 31, pp. 1-2. Acireale, 1917.

Oidium leucoconium Desm. develops regularly each year in the orchards of western Sicily.

The young peach trees sometimes do not lose their leaves in winter and the extremities of the twigs remain green and tender, so that the fungus not only hibernates in them, but also prepares the summer reproduction.

Peach mildew is not serious in itself, since only the ends of the twigs are attacked; but the persistent disease, renewed each year, shortens the life of the tree and compromises the bearing of fruit.

Of the remedies, potassium sulphate and lime-sulphur mixture scorch the plant. The author's experiments of 1916 showed sulphur to be preferable. The use of sulphur in this case is only efficacious if applied before the mildew has a definite hold on the plant; the sulphur treatment must be repeated each time a new attack by the parasite is to be feared. Sulphur, moreover, is beneficial to the growth of the tree.

CONTENTS OF THE INSTITUTE ECONOMIC BULLETIN

In addition to those already dealt with herein, the following is a list of the more important subjects treated in the January number of the International Review of Agricultural Economics. Persons interested in any of the articles in this list may obtain the original bulletin on application to the Institute Branch, so long as the supply for distribution is not exhausted.

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AGRICULTURAL STATISTICS

WHEAT CROP OF 1917

AREA SOWN TO WINTER CEREALS, AND RECENT CONDITIONS

BY T. K. DOHERTY, L.L.B.

The wheat harvests, which begin in the Northern Hemisphere with the crop of India, terminate in the following December and January for the countries of the Southern Hemisphere. Official returns to the International Institute of Agriculture for 1917 have been recently made by Australasia, Argentina, and Uruguay, so that in Table "A" there is presented, for the countries open to the world's commerce, a nearly complete statement of the production for the calendar year 1917. The figures for the countries not open to the world's commerce are, except for the five-year averages, and as qualified in the notes, mere rough estimates. In the Southern Hemisphere, although the harvest runs into the next calendar year, the crops are referred to the year in which the harvest is generally begun.

In addition to the pre-war five-year average, which the Institute have published heretofore, there appears the five-year average 1911-15.

There follows in Table "B" the world's wheat acreage for the same periods, covering a small number of countries. Table "C" gives areas in winter cereals for 1917-18.

TABLE A

WORLD'S PRODUCTION OF WHEAT

COUNTRIES OPEN TO THE WORLD'S COMMERCE

COUNTRIES	1917	1916	Five Years' Average, 1911-15	Five Years' Average, 1909-13
	Bushels	Bushels	Bushels	Bushels
United States	650,828,000	636,318,000	806,361,000	686,694,000
Canada	233,743,000	262,781,000	248,325,000	197,118,000
Mexico (a)	8,480,000	8,000,000	8,480,000	8,480,000
Argentina	218,628,000	70,225,000	160,996,000	147,071,000
Chili (a)	12,000,000	12,000,000	14,000,000	14,000,000
Uruguay	12,860,000	5,390,000	6,714,000	6,519,000
France	144,151,000	204,910,000	271,607,000	317,639,000
Great Britain and Ireland	64,321,000	59,775,000	62,954,000	59,640,000
Italy	140,001,000	176,531,000	182,576,000	183,336,000
Denmark	4,300,000	6,026,000	6,238,000	5,344,000
Norway	241,000	305,000	296,000	306,000
Sweden	6,871,000	8,979,000	8,610,000	7,769,000
Netherlands	3,452,000	4,586,000	5,737,000	4,896,000
Switzerland	4,556,000	3,821,000	3,497,000	3,314,000
Spain	142,676,000	152,330,000	125,214,000	130,447,000
Portugal (a)	7,440,000	8,000,000	7,440,000	7,440,000
Greece (a)	4,000,000	8,000,000	4,320,000	4,320,000
Cyprus and Malta (a)	2,400,000	2,400,000	2,400,000	2,400,000
Algeria	28,980,000	29,152,000	34,513,000	34,998,000
Egypt	29,835,000	36,543,000	35,180,000	34,814,000
Tunis	6,963,000	5,512,000	6,224,000	6,230,000
Union of South Africa	8,833,000	4,790,000	6,520,000	6,520,000
India	379,232,000	318,005,000	360,550,000	359,035,000
Japan	32,727,000	28,307,000	24,669,000	24,166,000
Australia	122,584,000	152,088,000	94,297,000	90,499,000
New Zealand	6,276,000	5,030,000	6,405,000	7,070,000
Totals	2,276,378,000	2,209,804,000	2,494,123,000	2,350,065,000

COUNTRIES NOT OPEN TO THE WORLD'S COMMERCE

COUNTRIES	1917	1916	Five Years' Average 1911-15	Five Years' Average 1909-13
	Bushels	Bushels	Bushels	Bushels
Belgium (b)	9,000,000	11,917,000	14,500,000	14,896,000
Austria (b)	36,500,000	48,672,000	55,580,000	60,840,000
Hungary	135,000,000	135,717,000	159,923,000	169,646,000
Germany (b)	91,000,000	121,696,000	153,668,000	152,120,000
Bulgaria	(c) 34,000,000	33,951,000	43,987,000	42,440,000
Herzegovina and Bosnia (b)	1,500,000	2,048,000	2,300,000	2,560,000
Poland	39,000,000	52,000,000	52,000,000	65,000,000
Russia-in-Europe	(c) 550,000,000	595,425,000	624,620,000	624,620,000
Russia-in-Asia	(c) 86,000,000	86,812,000	112,068,000	151,142,000
Roumania	(c) 70,000,000	78,521,000	81,070,000	87,793,000
Serbia (b)	8,000,000	10,880,000	12,000,000	13,800,000
Persia (a)	13,600,000	13,600,000	13,600,000	13,600,000
Total	1,073,600,000	1,191,239,000	1,325,316,000	1,398,457,000
World's total	3,349,978,000	3,401,043,000	3,819,439,000	3,748,522,000

NOTE:—The above figures are official except where otherwise indicated.

(a) From Broomhall's Corn Trade News.

(b) For 1916, 20 per cent and for 1917, 40 per cent deducted from the pre-war five year average. For details concerning the basis of these estimates, see note "g" under the "World's Wheat Production" table in THE AGRICULTURAL GAZETTE of September, 1917 (page 841).

(c) Estimated from condition reports.

Table "A".—Here the figures of production are, for the Northern Hemisphere, except for a few slight changes, the same as those mentioned in THE AGRICULTURAL GAZETTE for January, 1918 (pp. 109-112), but the data for the Southern Hemisphere, which were at that time only roughly estimated, are now presented as official. The forecast of 210,000,000 bushels for Argentina compares with the official 218,628,000, and 115,000,000 bushels estimated then for Australia now becomes 122,564,000.

In Table "A", setting aside the unreliable data referring to the Central European Empires, the total production for 1917 is 66,574,000 bushels larger, or 3% more than for 1916; 217,745,000 bushels, or 9% less than the average of the five years 1911-15; 73,687,000 bushels, or 3% less than the average of the five years 1909-13. The total figures for the Central Empires and the aggregate figures for the world's production, comprising the totals of the Central Empires, may be of interest and considered as a fairly reasonable guess but should not be relied upon. The data for Russia-in-Europe are official except for 1917.

TABLE B
WORLD'S WHEAT ACREAGE

COUNTRIES	1917	1916	Five Years' Average, 1911-15	Five Years' Average, 1909-13
	Acres	Acres	Acres	Acres
United States	45,941,000	52,316,000	51,911,000	47,495,000
Canada	14,756,000	15,370,000	11,616,000	10,532,000
Argentina	17,876,000	16,089,000	16,455,000	16,052,000
Uruguay	1,014,000	780,000	852,000	791,000
France	10,439,000	12,430,000	14,625,000	16,161,000
Great Britain and Ireland	2,103,000	2,052,000	1,990,000	1,868,000
Italy	10,557,000	11,679,000	11,900,000	11,723,000
Denmark	131,000	152,000	133,000	114,000
Norway	14,000	14,000	14,000	12,000
Sweden	329,000	307,000	272,000	255,000
Netherlands	122,000	134,000	147,000	138,000
Switzerland	139,000	124,000	106,000	104,000
Spain	10,340,000	10,148,000	9,739,000	9,548,000
Egypt	1,116,000	1,447,000	1,373,000	1,315,000
Tunis	1,310,000	1,482,000	1,338,000	1,310,000
Union of South Africa	925,000	755,000	737,000	744,000
India	32,940,000	30,480,000	30,537,000	29,218,000
Japan	1,458,000	1,302,000	1,205,000	1,196,000
Australia	9,857,000	11,530,000	9,238,000	7,603,000
New Zealand	294,000	219,000	218,000	242,000
Totals	161,661,000	168,810,000	164,406,000	156,421,000

Table "B" Acreage.—The acreage figures are not available for Mexico, Chili, Portugal, Greece, Cyprus and Malta, Algeria, or for the countries mentioned in the second part of Table "A." The total acreage of the remaining countries shown in this table compares with the total production of the same countries as follows, the corresponding production percentages being in parenthesis. Acreage of 1917, 4% less than 1916 (production 3% more); 2% less than 1911-15 (production 9% less); 3% more than 1909-13 (production 3% less). As compared with 1916, the increase of acreage in Argentina and India are more than offset by the notable decreases in the United States, Canada, France, Italy, and Australia. There is not, however, a corresponding decrease in production in the United States, where an area smaller by 6,375,000 acres produced a crop nearly 15,000,000 bushels larger, while an increase in Argentina of only 1,787,000 acres produced over 148,000,000 bushels more. These comparisons are interesting, showing, as they do, what a large crop may be harvested this season on this continent with the increased acreage of the United States in winter wheat, and the prospective increase in spring wheat acreage of both the United States and Canada

TABLE C

AREAS SOWN TO WINTER CEREALS IN THE NORTHERN HEMISPHERE, 1917-18

COUNTRIES	1917-18	1916-17	Increase (+) or Decrease (—)
	Acres	Acres	Acres
WHEAT:			
Denmark	141,000	138,000	+ 3,000
Spain	9,937,000	10,134,000	— 197,000
France	11,360,000	10,569,000	+ 791,000
Scotland	67,000	55,000	+ 12,000
Luxemburg	23,000	22,000	+ 1,000
Canada (a)	349,000	725,000	— 376,000
United States (a)	36,392,000	27,430,000	+ 8,962,000
India	34,470,000	30,924,000	+ 3,546,000
Japan	1,458,000	1,236,000	+ 222,000
Tunis	1,483,000	1,310,000	+ 173,000
Totals	95,680,000	82,543,000	+ 13,137,000
RYE:			
Denmark	537,000	455,000	+ 82,000
Spain	1,977,000	1,829,000	+ 148,000
France	1,955,000	2,046,000	— 91,000
Luxemburg	16,000	17,000	— 1,000
United States	6,119,000	4,214,000	+ 1,905,000
Totals	10,604,000	8,561,000	+ 2,043,000
BARLEY:			
Spain	4,143,000	3,839,000	+ 304,000
France	249,000	270,000	— 21,000
Japan	2,721,000	2,738,000	— 17,000
Tunis	1,154,000	1,038,000	+ 116,000
Totals	8,267,000	7,885,000	+ 382,000
OATS:			
Spain	1,434,000	1,168,000	+ 266,000
France	1,711,000	1,608,000	+ 103,000
Tunis	148,000	124,000	+ 24,000
Totals	3,293,000	2,900,000	+ 393,000

(a) Winter-killed areas deducted.

Table "C"—Area of Winter Cereals.—The official data to hand do not include all the winter wheat countries. Just a brief reference to a few that are omitted. Sweden and Norway produce practically no winter cereals. Italy is credited with an area in wheat about equal to that of 1917, with a promise of a crop of about the same size. Egypt is officially reported to have increased its acreage in all cereals by 35%. There is no report from Algeria, except of favourable seeding and growing conditions. England and Wales report 15% increase in wheat and 3% in rye.

The outstanding feature in Table "C" is the great increase of wheat acreage in the United States and India, and winter rye as well, in the United States. Spain's slight decrease in wheat is offset by increases in all other grains. Increased production of rye in the coming season from the acreage already reported and that in prospect, in view of its growing popularity, will bring it into prominence among the other bread cereals of 1918-19.

That all the grains share in the increases, as well as wheat and rye, is apparent from the following percentages exhibited by the totals of each kind of cereal in 1917-18, compared with 1916-17. Wheat shows an increase of 15%; rye, 24% barley, 5%; oats, 14%.

SUPPLY AND DEMAND AUGUST 1, 1917, TO AUGUST 1, 1918

The situation, in so far as the European requirements are concerned, as presented in the January AGRICULTURAL GAZETTE, (p. 110), notwithstanding the receipt of later data, does not need any material change. The import requirements of these countries for the current grain year, resulting from the detailed analyses of their production by groups, were recapitulated in the table which is here reproduced as follows:—

	Pre-war Consumption	Normal Import Needs 1917-18	Estimated Minimum Needs, 1917-18
	Bushels	Bushels	Bushels
France	361,364,000	217,214,000	180,000,000
Italy	236,614,000	96,614,000	80,000,000
Great Britain	275,693,000	211,629,000	180,000,000
Greece			20,000,000
Portugal			3,000,000
Belgium	64,000,000	55,000,000	24,000,000
Malta, Egypt, Mesopotamia, Jerusalem			10,000,000
Total Allied requirements			497,000,000
Scandinavia, Netherlands, Spain and Switzerland			48,000,000
Outside of Europe, including 15 millions to Brazil			50,000,000
World's requirements, 1917-18			595,000,000

The supplies from the exporting countries to meet this demand and the estimated exports for the current year, as set forth in the January GAZETTE, need no modification in so far as Canada and the United States are concerned. The detailed production of all the exporting countries are comprised in Table "A." New Zealand, Uruguay, Chili, and Algeria, although classed among the exporting countries, can ship but a negligible quantity. The European demand must be supplied from the remaining five producing countries. The total production of the United States, Canada, Argentina, Australia, and India for 1917 was 1,605,015,000 bushels, compared with 1,439,417,000 for 1916, and a five-year pre-war average of 1,480,417,000 bushels.

The following Tables "D," "E," and "F" give the monthly exports of these five countries for 1915-16, 1916-17, and nine months of 1917-18 to date.

TABLE D.

WHEAT EXPORTS OF CANADA AND UNITED STATES FOR THE GRAIN YEARS 1915-16, 1916-17 AND 1917-18 TO DATE (INCLUDING WHEAT FLOUR EXPRESSED AS WHEAT).

1915-16	CANADA	UNITED STATES
August	3,149,532	20,258,000
September	7,629,162	25,864,000
October	35,144,450	23,590,000
November	47,045,176	19,143,000
December	42,524,051	20,250,000
January	8,245,626	20,743,000
February	8,309,850	20,992,000
March	10,072,595	23,964,000
April	16,216,850	22,323,000
May	34,101,415	20,503,000
June	28,049,379	12,113,000
July	28,669,653	10,422,000
Total for 1915-16	269,157,739	240,165,000
1916-17.		
August	23,127,830	15,316,000
September	12,802,841	17,987,000
October	16,618,305	15,722,000
November	18,263,408	18,916,000
December	22,383,800	18,608,000
January	10,000,587	24,003,000
February	4,231,090	13,560,000
March	8,594,437	12,419,000
April	4,544,841	18,505,000
May	23,647,730	16,368,000
June	19,946,412	20,943,000
July	10,403,967	8,422,000
Total for 1916-17	174,565,248	200,769,000
1917-18		
August	18,697,663	9,739,000
September	6,154,422	7,182,000
October	17,174,094	11,483,000
November	29,191,024	10,614,000
December	33,755,806	15,315,000
January	8,491,833	12,432,000
February	9,574,045	10,502,000
March	13,500,367	12,207,000
April	11,073,961	12,364,000
Total for 9 months	147,613,215	101,838,000

TABLE E.

EXPORTS OF WHEAT FROM INDIA, AUSTRALIA AND ARGENTINA, 1915-16 TO 1917-18.

Months.	India	Australia	Argentina
	Bushels	Bushels	Bushels
Total for 1915-16	6,981,000	36,744,000	62,464,000
Total for 1916-17	52,504,000	70,632,000	55,376,000
1917-18.			
August	3,004,000	8,164,000	720,000
September	1,724,000	4,236,000	1,600,000
October	860,000	3,080,000	928,000
November	600,000	1,852,000	2,048,000
December	1,020,000	2,532,000	1,856,000
January	612,000	2,260,000	2,904,000
February	688,000	2,004,000	3,080,000
March	1,224,000	3,000,000	8,160,000
April	840,000	2,144,000	13,992,000
Total for 9 months	10,572,000	29,272,000	35,288,000

TABLE F.

RECAPITULATION OF TABLES "D" AND "E"

Countries.	1915–16	1916–17	9 months, Aug. 1, 1917, to April 30, 1918
	Bushels	Bushels	Bushels
Canada	269,157,739	174,565,248	147,613,215
United States	240,165,000	200,769,000	101,838,000
India	6,981,000	52,504,000	10,572,000
Australia	36,744,000	70,632,000	29,272,000
Argentina	62,464,000	55,376,000	35,288,000
	615,511,739	553,846,248	324,583,215

The exports for the nine months of the current year, amounting to only 324,583,000 bushels, are not up to requirements nor, except on this continent, up to expectations. If they were to continue at the same average annual rate they would barely reach 434,000,000 bushels against estimated world requirements of 595,000,000, comprising allied requirements of 497,000,000. There has been a notable falling-off for India and Australia, but it is encouraging to note that the figures for Argentina have steadily risen, and it is to be presumed that the bulk of the 93,000,000 bushels contracted for by the British Government will be shipped by August 1st, and this would involve the further shipment of probably some 65,000,000 bushels. It is quite problematical what India and Australia can do. For Canada and the United States, the earlier expectations of many who have publicly expressed opinions have been much exceeded, and instead of a United States export of only 50,000,000 to 80,000,000 bushels, and Canadian exports of some 100,000,000 bushels, the figures will probably reach 151,000,000 and 185,000,000 bushels respectively as the following table shows: (a)

	Canada	United States
	Bushels	Bushels
Production for 1917	234,000,000	651,000,000
Carry-over August 1st, 1917	26,000,000	22,000,000
Total supply of wheat	260,000,000	673,000,000
Food for 12 months and seed (estimated)	70,000,000	512,000,000
Total remaining	190,000,000	161,000,000
Exports for 9 months to May 1st	147,000,000	101,000,000
Balance for export and carry-over (estimated)	43,000,000	60,000,000

(a) Our forecasts in the GAZETTES of September, 1917, and of January, 1918, were for an export of 140,000,000 from the United States and 185,000,000 from Canada.

UNITED STATES MAY CROP REPORT

Estimates for the winter wheat crop for 1917-18 are made by the U.S. Department of Agriculture at 572,539,000 bushels, based on conditions prevailing May 1st. The estimate as of April 1st, 1918, was 560,000,000, but the favourable weather prevailing throughout the greater part of April was very beneficial. Last year the crop amounted to 418,070,000 bushels, and the largest crop ever grown was that of 1914, when 684,990,000 bushels were harvested.

Production of 82,629,000 bushels of rye is forecast from May 1st condition, compared with a forecast of 86,000,000 bushels based on the April 1st condition, 60,145,000 bushels produced last year, and 47,383,000 bushels in 1916.

Production of hay will be 107,550,000 tons, based on a condition of 89.6 per cent. of normal and an expected acreage of 69,531,000 acres, of which 53,605,000 is tame and 15,926,000 wild.

Stocks of hay on farms May 1st, are estimated at 11,096,000 tons. Average condition of pastures was 83.1 per cent. of a normal, spring ploughing was 77.5 per cent completed, and spring planting 60.8 per cent.

WHEAT FED TO LIVE STOCK IN THE UNITED STATES

(In the U. S. Monthly Crop Report, March, 1918)

A special telegraphic inquiry was made under date of March 2nd to the field agents of the Bureau of Crop Estimates in the fifteen leading wheat producing States concerning the amount of the 1917 wheat crop fed to live stock.

The responses show that the amount of wheat fed to live stock is less than in former years, except in a few States or sections where there was difficulty in obtaining other feed stuffs.

The highest figure reported, 7 per cent. was from Montana, where in some sections feeding of wheat was necessary to prevent live stock from starving. In Oregon, 6 per cent. was fed. These two States together account for 2,000,000 bushels thus fed. Washington reports 4.5 per cent., being 1,500,000 bushels, against 2,300,000 usually fed. Moderately heavy feeding in western and west central Texas and Oklahoma in sections where other crops were almost a total failure, in order to save live stock, has required about 800,000 bushels in the former State and 900,000 in the latter, being 5 per cent. and 2½ per cent. of the total crops of those States. Something over 1,000,000 bushels has been fed in North Dakota, about 2 per cent. of the crop. Ohio has fed less than a million bushels, and less than 2 per cent. of its crop. Pennsylvania reports almost 1,500,000 bushels, or about 6 per cent, of the crop.

The remaining States report very small quantities of wheat being fed. It appears that the total quantity of wheat fed to live stock will not exceed 2 per cent., and that the sound wheat fed is probably within 1 per cent. of the crop. A large part of the wheat fed is inferior or musty grain unfit for milling. A considerable amount of it represents the screenings from seed wheat. In Ohio, it is reported that 49 per cent. of the wheat fed was of grade 1 and 2, 15 per cent. of grade 3, and 36 per cent of grade 4, screenings and spoiled wheat. Sixty-four per cent. of that was fed to poultry, 26 per cent. to hogs, and 10 per cent. to other animals.

Except in some of the western States named, the principal consumption of wheat fed has been by poultry.

FOOD SURVEYS BY THE U. S. DEPARTMENT OF AGRICULTURE

The first number of "Food Surveys," a new monthly published by the Bureau of Markets of the United States Department of Agriculture, has just been issued. It contains an announcement of the Act of Congress dated August 10, 1917, authorizing the Secretary of Agriculture "to investigate and ascertain the demand for, the supply, consumption, costs, and prices of, and the basic facts relating to the ownership, production, transportation, manufacture, storage, and distribution of foods, food material, feeds, seeds, fertilizers, agricultural implements and machinery, and any article required in connection with the production distribution, or utilization of food."

The first issue of "Food Surveys" contains information regarding the stocks of wheat and wheat flour, other important cereals, and wheat flour substitutes, reported by elevators and grain warehouses, general warehouses, grain mills, and wholesale grain dealers. The tables submited include total stocks reported for April 1, 1918, and April 1, 1917. A similar report will appear in each monthly issue. A series of special issues will appear shortly giving the final results of a comprehensive survey of the commercial stocks of different products on December 31, 1917

According to the first issue of "Food Surveys," 7,518 firms, including elevators and grain warehouses, general warehouses, grain mills and wholesale grain dealers, have sent in reports. The stocks of wheat held by these firms on April 1, 1918, amounted to 26,393,909 bushels, compared with 69,655,580 on April 1, 1917.

DIRECTORY OF THE DEPARTMENT OF AGRICULTURE.

Minister........................The Honourable Thos. Alexander Crerar

Private Secretary ....T. J. Lynton

Deputy Minister.........................Geo. F. O'Halloran, B.A., B.C.L.

Assistant Deputy Minister Secretary........Lt.-Col. A. L. F. Jarvis, I.S.O.

Commissioner under The Agricultural Instruction Act..W. J. Black, B.S.A.

Chief Translator..............................C. E. Mortureux, B.S.A.

The Dominion Experimental Farms Branch..Director, J. H. Grisdale, B.Agr.

Of the Central Experimental Farm and twenty Branch Farms and Stations distributed over Canada, conducts research and experiments in animal, field, orchard, garden and greenhouse husbandry, distributes superior seeds, analyzes and tests fertilizers and feeding stuffs, studies diseases of plants and administrates ordinances for their control, and demonstrates what are of value.

The Dairy and Cold Storage Branch.........Commissioner, J. A. Ruddick.

Encourages and assists in the development of the dairying industry and the improvement of the storage, transportation, sale and trade in agricultural products; administers the Dairy Industry Act (1914), the Cold Storage Act (1907), and the Cold Storage Warehouse Act (1914).

The Seed Branch................Commissioner, George H. Clark, B.S.A.

Encourages the production and use of superior seed, the production of farm and garden crops, tests seed for farmers and seed merchants and administers the Seed Control Act.

The Live Stock Branch........ ..Commissioner, H. S. Arkell, M.A., B.S.A.

Encourages and assists the development of the live stock industry.

The Health of Animals Branch....Veterinary Director General, Frederick Torrance, B.A., D.V.S.

Administers the Animals Contagious Diseases Act and the Meat and Canned Food Act. Protects Canadian live stock from contagious diseases.

Entomological Branch...Dominion Entomologist, C. Gordon Hewitt, D.Sc.

Conducts investigations on insects in relation to agriculture, encourages the use of methods of prevention and control and administers the Insects and Pests Section of the Destructive Insect and Pest Act.

The Fruit Branch.......................Commissioner, Donald Johnson.

Encourages the development of the fruit industry along commercial lines. Also adminsiters Part IX of the Inspection and Sale Act relating to fruit and fruit packages.

International Institute of Agriculture..Commissioner, T. K. Doherty, LL.B.

Supplies Institute at Rome statistics and official information respecting agriculture in Canada and prepares for distribution in Canada corresponding information from countries adhering to the international Institute of Agriculture.

The Publication Branch............Editor and Chief, J. B. Spencer, B.S.A.

Distributes the publications of the Department and edits The Agricultural Gazette of Canada.

The Exhibition Branch...............Commissioner, Col. Wm. Hutchison.

Prepares and takes charge of Canada's building and exhibits at International Expeditions.

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